



ATTO Technology, Inc. ATTO FibreBridge^Ô Product Modules

Software Manual

ATTO FibreBridge 2100R, 2200 R/D, 3100R and 3200R Product Modules

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Chapter 1:ATTO FibreBridge Services

This document defines the ATTO FibreBridge services and applications available to customers including:

- ATTO FibreBridge configuration
- ATTO FibreBridge maintenance
- ATTO FibreBridge diagnostics
- System diagnostics

These services are available through the RS-232 interface and Ethernet. In the future, the services may be accessed through Fibre Channel. Examples in this document will be shown using the RS-232 interface.

ATTO FibreBridge Configuration Services

ATTO FibreBridge configuration services allow configuration of all ATTO FibreBridge interfaces and general firmware operational parameters. The following is an abbreviated list of ATTO FibreBridge Configuration Services:

- Serial Port Configuration
- Fibre Channel Port Configuration
- SCSI Port 1 & 2 Configuration
- Firmware Operation

ATTO FibreBridge Maintenance Services

ATTO FibreBridge maintenance services allow the performance of basic maintenance services on the ATTO FibreBridge. The following is an abbreviated list of ATTO FibreBridge maintenance services:

- SCSI Enclosure Services Information (temperature, P/S status, etc.)
- FibreBridge Identification (revision levels, configurations, etc.)
- Downloading new firmware
- Issuing SCSI bus resets
- Issuing Fibre Channel resets (LIPs, etc.)
- Restarting firmware (causes power-on diagnostics to be executed)

ATTO FibreBridge Diagnostic Services

ATTO FibreBridge Diagnostic Services allow diagnostic tasks to be performed on the ATTO FibreBridge. The diagnostics should aid in validating the correct operation of an ATTO FibreBridge. The following is an abbreviated list of ATTO FibreBridge diagnostic services:

- Viewing Internal Error Log

System Diagnostic Services

System Diagnostic Services allow the use of the ATTO FibreBridge in determining the correct operation of the complete system or isolating system level problems. The following is an abbreviated list of System Diagnostic Services:

- Show SCSI Device Information
- Show Fibre Channel Device Information
- Show I/O Statistics
- Domain Validation

Chapter 2:Operation

There are two methods of operation: Menu Interface and Command Line Interface (CLI). The Menu Interface is designed for human interface and follows a standard menu / choice model. The Command Line Interface provides access to ATTO FibreBridge services through ASCII command lines. CLI is designed primarily for use by applications such as ATTO BridgeTools as well as "power-users". The services accessible through CLI are a superset of those available through the Menu Interface.

Initial Display (RS-232)

The initial display, after powering up the unit or restarting the firmware will contain the following information:

*ATTO FibreBridge XX00
© 2000 ATTO Technology, Incorporated.*

Firmware version mm.mm release date dd mmm yyyy, hh:mm:ss Build zzzz

*Power-On Self-Test Completion Status: GOOD.
xx Megabytes of RAM Installed.*

*1 1.0624 Gb/s Fibre Channel Interface.
2 Differential SCSI Interface Ports.*

*Power Supply A: OK
Power Supply B: OK
* not applicable to the ATTO FibreBridge 2200 R/D.*

World Wide Name = xx xx xx xx xx xx xx xx

*FibreBridge Name = xxxxxxxx
Internal Temperature = xx
Error Log Contents: NO ERRORS
For help, type HELP. To enable the menu interface, type MENU.*

Ready.

This completes the ATTO FibreBridge initial display. Now the ATTO FibreBridge is in the Command Line Interface mode of operation. Typing the MENU command enters the menu system.

Chapter 3:Command Line Interface (ATTO FibreBridge 2200R/D, 3100R and 3200R)

The command line interface (CLI) provides access to FibreBridge services through a set of ASCII based command lines. CLI commands may be entered while in CLI mode and Menu Interface mode.

CLI commands are context sensitive and generally follow a standard format.

[Get | Set] Command [Parameter 1 [Parameter 2 [...]]]\n

Note: In this document, braces ([]) indicate a choice of fields and (<>) indicates optional fields. A subsequent version of this document will clarify the differences between the Get and Set command syntax. Generally, a Set command requires one additional parameter than the related Get command.

Commands generally have four types of operation: immediate, get, set and usage. The Get form returns the value of a parameter or setting. The Set form changes the value of a parameter or configuration setting. Set and get commands do not take effect until a SaveConfiguration command is carried out.

Immediate commands (signified by the immediate keyword in this document) cause an instantaneous action to be carried out, and are not preceded by the ‘get’ or ‘set’ keyword. If the form of operation cannot be determined, it is assumed to be the Usage form and a brief help message is displayed.

The strings “get” and “set” may be abbreviated by ‘g’ and ‘s’, respectively.

All commands are case insensitive unless specifically noted.

Decimal numbers may be entered as raw numerical input (e.g. 123).

Octal numbers must be preceded by the number 0 (e.g. 0713).

Hexadecimal numbers must be preceded by the C-style 0x prefix (e.g. 0x1FA4).

Quoted strings will be treated as a single parameter for any command which expects character input, regardless of spaces in the string.

Several commands require a save before their modified parameters take effect. When such a command is executed an asterisk will appear next to the command-line prompt. Similarly, an asterisk will appear next to a menu title if any menu parameters have been modified. Save the current configuration to store any modified parameters and remove the asterisk.

CLI responses can take several forms:

All Responses are followed by the string “Ready.\n”.

Responses to Set Commands are either the error message or “Ready.”

Responses to Get Commands are specified in the *Results:* field for each command, followed by “Ready.\n”

The following sections describe commands available through the command line interface.

ATTO FibreBridge Configuration Service Commands

FcAck0 (ATTO FibreBridge 2200R/D & 3200R)

Syntax: set FcAck0 [enabled | disabled]
get FcAck0

Returns:

(terse) [enabled | disabled]
(verbose) FcAck0 = [enabled | disabled]

Specifies whether ACK0 or ACK1 will be returned in response to a Class 2 FC data frame or Sequence. Enable this option to send ACK0 at the end of a Sequence. Disable this option to return an ACK1 frame for each data frame.

FcAddressTranslation

Syntax: set FcAddressTranslation [enabled | disabled]
get FcAddressTranslation

Returns:

(terse) [enabled | disabled]
(verbose) FcAddressTranslation = [enabled | disabled]

Specifies whether LUNs received from the host are translated according to the appropriate PDAM, LUAM, or VDAM translation rules.

FcAddressLUAM

Syntax: set FcAddressLUAM [bb || tt]
get FcAddressLUAM

Returns:

(terse) bb || tt
(verbose) FcAddressLUAM = bb || tt

Specifies the translation rules applied to Fibre Channel LUNs in the Logical Unit Address Method format.

FcAddressPDAM

Syntax: set FcAddressPDAM [bb || tt]
get FcAddressPDAM

Returns:

(terse) bb || tt
(verbose) FCAddressPDAM = bb || tt

Specifies the translation rules applied to Fibre Channel LUNs in the Physical Device Address Method format.

FcAddressVDAM

Syntax: set FcAddressVDAM [bb || tt]
get FcAddressVDAM

Returns:

(terse) bb || tt
(verbose) FCAddressVDAM = bb || tt

Specifies the translation rules applied to fibre channel LUNs in the Virtual Device Address Method format.

FcConnMode (ATTO FibreBridge 2200R/D and 3200R)

Syntax: set FcConnMode [loop | ptp]
get FcConnMode

Returns:

(terse) [loop | ptp]
(verbose) FcConnMode = [loop | ptp]

Specifies the Fibre Channel port type to which the ATTO FibreBridge will attempt to login. Set FcConnMode to 'loop' to enable FL_Port logins and FC_AL communications and addressing. Set FcConnMode to 'ptp' to enable Point-to-Point connections (i.e. F_Port fabric connections).

FcClass2 (ATTO FibreBridge 2200R/D and 3200R)

Syntax: set FcClass2 [enabled | disabled]
get FcClass2

Returns:

(terse) [enabled | disabled]
(verbose) FcClass2 = [enabled | disabled]

Specifies whether the FibreBridge will support Fibre Channel Class 2 ("Multiplexed") service. The FibreBridge uses Class 3 service by default.

FcFairArb

Syntax: set FcFairArb [enabled | disabled]
get FcFairArb

Returns:

(terse) [enabled | disabled]
(verbose) FcFairArb = [enabled | disabled]

The FcFairArb command is used to turn on or off FC-AL arbitration fairness. The default setting is on, enabling arbitration fairness.

FcFrameLength

Syntax: set FcFrameLength [512 | 1024 | 2048]
get FcFrameLength

Returns:

(terse) [512 | 1024 | 2048]
(verbose) FcFrameLength = [512 | 1024 | 2048]

Specifies the maximum number of payload bytes in a Fibre Channel frame. If the frame length is not specified, the current frame length is displayed. The default frame length is 2,048 bytes.

FcFullDuplex (ATTO FibreBridge 2200R/D and 3200R)

Syntax: set FcFullDuplex [enabled | disabled]
get FcFrameLength

Returns:

(terse) [enabled | disabled]
(verbose) FcFullDuplex = [enabled | disabled]

The FcFullDuplex command is used to enable or disable full duplex mode communications between the ATTO FibreBridge and Fibre Channel hosts. When this option is enabled the ATTO FibreBridge may transmit and receive Fibre Channel data simultaneously.

FcHard

Syntax: set FcHard [enabled | disabled]
get FcHard

Returns:

(terse) [enabled | disabled]
(verbose) FcHard=[enabled | disabled]

The Fchard command is used to turn on or off Fibre Channel hard address assignment. The current state of hard addressing is displayed when the optional parameter is missing. The default is off or soft addressing. Under soft addressing, the ATTO FibreBridge loop address is assigned during loop initialization.

FcHardAddress

Syntax: set FcHardAddress [address]
get FcHardAddress

Returns:

(terse) 0xaaaa
(verbose) FcHardAddress = 0xaaaa

The FcHardAddress command is used to set the value used as the FC-AL hard address. When the optional address is not present, the current value used for hard addressing will be displayed.

FcInitiator

Syntax: set FcInitiator [enabled | disabled]
get FcInitiator

Returns:

(terse) [enabled | disabled]
(verbose) FcInitiator=[enabled | disabled]

The FcInitiator command is used to allow the FibreBridge to operate as an initiator on the Fibre Channel network. This functionality is necessary for features such as Extended Copy / Serverless Backup to locate and send commands to Fibre Channel devices.

FcSCSIBusyStatus

Syntax: set FcSCSIBusyStatus [busy | qfull]
get FcSCSIBusyStatus

Returns:

(terse) [busy | qfull]
(verbose) FcScsiBusyStatus=[busy | qfull]

Specifies the SCSI status value returned when the ATTO FibreBridge is unable to accept the command due to a temporary lack of internal resources. The factory default setting is to return a SCSI status of Queue Full.

FibreBridgeName

Syntax: set FibreBridgeName [name]
get FibreBridgeName

Returns:

(terse) "name"
(verbose) FibreBridgeName = "name"

Specifies the name assigned to the ATTO FibreBridge. This is not the World Wide Name (WWN). The ATTO FibreBridge name is an eight character name used by applications to identify individual ATTO FibreBridge units. The specified name will be padded with spaces to a maximum of eight characters.

FibreBridgeSoftLUN

Syntax: set FibreBridgeSoftLUN [0 – 15]
get FibreBridgeSoftLUN

Returns:

(terse) n [(PORT1) | (NVRAM) | (FORCED)]
(verbose) FibreBridgeSoftLUN = n [(PORT1) | (NVRAM) | (FORCED)]

Specifies the soft Target ID to be used by the ATTO FibreBridge when addressed by the host. This ID is only taken from NVRAM when the soft ID enable is set to “enabled” AND when LUN Translation has been enabled. PORT1 indicates that the displayed value is taken from the value of the port 1 SCSI initiator ID. NVRAM indicates that the displayed value is taken from NVRAM. FORCED indicates that FC address translation is enabled while soft IDs are disabled so the ATTO FiberBridge ID is forced to 0.

FibreBridgeSoftLUNEnable

Syntax: set FibreBridgeSoftLUNEnable [enabled | disabled]
get FibreBridgeSoftLUNEnable

Returns:

(terse) [enabled | disabled]
(verbose) FibreBridgeSoftLUNEnable = [enabled | disabled]

Specifies whether the SCSI ID used by the ATTO FibreBridge when addressed by the host is determined by the FibreBridgeSoftLUN setting, or the port 0 SCSI IIDsetting. If this is ‘enabled’ and LUN translation is enabled, the FibreBridge will report its Target ID as the value of the FibreBridgeSoftLUN setting.

FcWWName

Syntax: get FcWWName

Returns:

(terse) "NN NN NN NN NN NN NN NN"
(verbose) FcWWName = "NN NN NN NN NN NN NN NN"

Reports the World Wide Name (WWN) of the FibreChannel interface. Set is not available for this command. The least Significant 6 bits of the WWN are used as the ethernet MAC address.

RequestQueueLength

Syntax: set RequestQueueLength [16 | 32 | 64 | 128 | 255 | 256 | 512]
get RequestQueueLength

Returns:

(terse)	<i>nn</i>
(verbose)	<i>RequestQueue Length = nn</i>

Specifies the number of entries in the internal Fibre Channel request queue data structure. When no entry count is specified, the current number of request queue entries will be displayed. When the specified number of queue entries is zero, the request queue size will be changed to the factory default value.

ResponseQueueLength

Syntax: set ResponseQueueLength [16 | 32 | 64 | 128 | 255 | 256 | 512]
 get ResponseQueueLength

Returns:

(terse)	<i>nn</i>
(verbose)	<i>ResponseQueueLength = nn</i>

Specifies the number of entries in the internal Fibre Channel response queue data structure. If the number of entries is not specified, the current number of response queue entries will be displayed. When the specified number of queue entries is zero, the response queue size will be changed to the factory default value.

ScsildSwitch

Syntax: set ScsildSwitch [PortNumber [enabled | disabled]]
 get ScsildSwitch [PortNumber]

Returns:

(terse)	<i>[enabled (HW) disabled (NVRAM)]</i>
(verbose)	<i>Port n ScsildSwitch = [enabled (HW) disabled (NVRAM)]</i>

Specifies whether the SCSI initiator ID for the specified port should be obtained by reading the external SCSI ID switch or through the value stored in non-volatile RAM.

ScsilInitID

Syntax: set ScsilInitID [PortNumber [0-15]]
 get ScsilInitID [PortNumber]

Returns:

(terse)	<i>[0-15] [(HW) (NVRAM)]</i>
(verbose)	<i>Port n ScsilInitId = [0-15] [(HW) (NVRAM)]</i>

Specifies the SCSI initiator ID to be used on the specified SCSI port. This field contains either the hardware switch setting (if ScsildSwitch is ENABLED) or the value in NVRAM (if ScsildSwitch is DISABLED.)

ScsiPortResetOnStartup

Syntax: set ScsiPortResetOnStartup [PortNumber [enabled | disabled]]
 get ScsiPortResetOnStartup [PortNumber]

Returns:

(terse)	<i>[enabled disabled]</i>
(verbose)	<i>Port n ScsiPortResetOnStartup = [enabled disabled]</i>

Specifies whether the SCSI port should be reset on power-up. The default setting is to reset each SCSI bus on startup.

ScsiPortSelTimeout

Syntax: set ScsiPortSelTimeout [PortNumber [256|128|64|32|16|8|4|2|1]]
 get ScsiPortSelTimeout [PortNumber]

Returns:
(terse) [enabled | disabled]
(verbose) Port n ScsiPortResetOnStartup = [enabled | disabled]

Indicates the time, in milliseconds, the ATTO FibreBridge will wait for a response from a SCSI device on the selected port after a selection request.

ScsiPortSyncTransfer

Syntax: set ScsiPortSyncTransfer [PortNumber [enabled | disabled]]
 get ScsiPortSyncTransfer [PortNumber]

Returns:
(terse) [enabled | disabled]
(verbose) Port n ScsiPortSyncTransfer = [enabled | disabled]

Specifies whether synchronous SCSI transfers should be negotiated with devices on the specified SCSI port. The default setting is 'enabled', enabling the ATTO FibreBridge to attempt negotiating synchronous SCSI transfers with devices supporting synchronous SCSI for maximum performance.

Should this be extended to enable/disable synchronous transfers based upon the physical interface (SE, LVD, HVD, Ultra3, etc.).

ScsiPortTaggedQueuing

Syntax: set ScsiPortTaggedQueuing [PortNumber [enabled | disabled]]
 get ScsiPortTaggedQueuing [PortNumber]

Returns:
(terse) [enabled | disabled]
(verbose) Port n ScsiPortTaggedQueuing = [enabled | disabled]

Specifies whether tagged command queuing is allowed on the SCSI port. The default setting is on, allowing tagged commands to be sent to devices that support tagged command queuing for maximum performance.

SCSIPortBusSpeed

Syntax: set ScsiPortBusSpeed [PortNumber [fast | ultra | ultra2]]
 get ScsiPortBusSpeed [PortNumber]

Returns:
(terse) [enabled | disabled]
(verbose) Port n ScsiPortUltra2 = [enabled | disabled]

This option controls the transfer rate at which the FibreBridge will attempt to negotiate with its SCSI devices. Choices are Fast SCSI, Ultra SCSI, and Ultra2 SCSI. The Ultra2 option is only valid if the current FibreBridge has LVD capable SCSI ports. An error will be if this parameter is selected on a FibreBridge that does not support LVD.

ScsiPortWideTransfer

Syntax: set ScsiPortWideTransfer [PortNumber [enabled | disabled]]
 get ScsiPortWideTransfer [PortNumber]

Returns:
 (terse) [enabled | disabled]
 (verbose) Port n ScsiPortWideTransfer = [enabled | disabled]

Specifies whether WIDE SCSI transfers should be negotiated. The default setting is on, allowing wide transfer negotiation with devices supporting wide SCSI transfers.

ScsiTargets (Immediate)

Syntax: ScsiTargets [sb]
 Returns:
 (terse) [line count]
 [sb][st][sl][Device Type][Vendor Id][Product Id][Revision][Serial Number]
 (verbose) [line count]
 [sb][st][sl][Device][Type][Vendor Id][Product Id]
 [sb][st][sl][Dev Type] [Vendor Id] [Product Id]
 [Rev.][Serial Number]
 [Revision][Serial Number]

Command returns a list of the SCSI devices, which are operational, on the referenced SCSI port. The line count indicates the number of data lines following. This command is only available on the ATTO FibreBridge 3200R when they use the latest version of firmware.

SerialPortBaudRate

Syntax: set SerialPortBaudRate [2400 | 9600 | 19200 | 38400 | 57600]
 get SerialPortBaudRate

Returns:
 (terse) [2400 | 9600 | 19200 | 38400 | 57600]
 (verbose) SerialPortBaudrate =[2400 | 9600 | 19200 | 38400 | 57600| 15200]

Configures the baud rate for the ATTO FibreBridge RS-232 serial port. The number of data bits per character is fixed at 8 with no parity. The serial port supports the following baud rates: 2400, 9600, 19200, 38400, 57600 and 115200. The factory default baud rate is 9600.

SerialPortStopBits

Syntax: set SerialPortStopBits [1 | 2]
 get SerialPortStopBits

Returns:
 (terse) [1 | 2]
 (verbose) SerialPortStopBits =[1 | 2]

Configures the number of stop bits per character for the ATTO FibreBridge RS-232 serial port. The number of data bits per character is fixed at 8 with no parity. The number of stop bits may be set to 1 or 2. The factory default is 1 stop bit.

SerialPortHandshake

Syntax: set SerialPortHandshake[hard | xon | none]
 get SerialPortHandshake

Returns:
 (terse) [hard | xon | none]
 (verbose) SerialPortHandshake=[hard | xon | none]

Configures the data handshaking method used for controlling the flow between the transmitter and receiver. Serial port flow control may be managed using hardware flow control, software flow control (Xon/Xoff) or no flow control. The default setting is no flow control.

ATTO FibreBridge Maintenance Service Commands

FcLIP (*Immediate*)

Syntax: FcLIP PortNumber

Returns:

(terse) [successful | ERROR: Loop Down]
(verbose) FcLip [successful | ERROR: Loop Down]

Issues a LIP on the Fibre Channel interface.

FibreChannelReset (*Immediate*)

Syntax: FibreChannelReset

Returns:

(terse) [successful | NOT successful]
(verbose) FibreChannelReset [successful | NOT successful]

Causes a reset of the Fibre channel port. There is no get version of this command.

FibreBridgeModel

Syntax: get FibreBridgeModel

Returns:

(terse) (FibreBridge XX00)
(verbose)
ATTO FibreBridge
© 2000 ATTO Technology, Incorporated

Firmware version mm.mm release date dd mmm yyyy Build zzzz

Reports the specific ATTO FibreBridge model information.

FirmwareRestart (*Immediate*)

Syntax: FirmwareRestart <forced>

Returns: after a pause, POST results and the startup screen will be deployed

This command will cause the ATTO FibreBridge to reboot and re-initialize its firmware.

PowerStatus

Syntax: get PowerStatus [a | b]

Returns:

(terse) [Unavailable | OK]
(verbose) PowerStatus [a | b] = [Unavailable | OK]

Displays the status of the specified power supply.

ScsiPortReset (*Immediate*)

Syntax: ScsiPortReset [PortNumber]
 Returns: Resetting Port Number *n*

Resets the specified SCSI bus. There is no get version of this command.

Temperature

Syntax: get Temperature
 Returns:
 (terse) xx C
 (verbose) Temperature = xx C

Reports the temperature of the unit, in C.

MaxEnclTempAIRM

Syntax: set MaxEnclTempAIRM [5 – 40]
 get MaxEnclTempAIRM
 Returns:
 (terse) xx C
 (verbose) MaxEnclTempAIRM = xx C

This option sets/displays the maximum enclosure temperature alarm of the unit in degrees Celsius. Valid entries are between 5 and 40 degrees and above the current minimum enclosure temperature alarm.

MinEnclTempAIRM

Syntax: set MinEnclTempAIRM [5 – 40]
 get MinEnclTempAIRM
 Returns:
 (terse) xx C
 (verbose) MinEnclTempAIRM = xx C

This option sets/displays the minimum enclosure temperature alarm of the unit in degrees Celsius. Valid entries are between 5 and 40 degrees and below the current maximum enclosure temperature alarm.

ATTO FibreBridge Diagnostic Service Commands

The ATTO FibreBridge Diagnostic commands are intended to aid in validating ATTO FibreBridge operation and diagnosing / isolating ATTO FibreBridge faults.

ErrorLog for ATTO FibreBridge 2100R

Syntax: set ErrorLog clear
 get ErrorLog
 Returns: [Error Logs Cleared |
 The last error code saved was xx
 A xxx type error was detected since last error log clearing
 Specific error text]
 Where xxx is : [960 |Static Memory | Synchronous DRAM | ISP2100 |
 Symbios 876 A | Symbios 876 B | FibreChannel | Software]
 and Specific error text is one line of descriptive error text.

ErrorLog for ATTO FibreBridge 3100R

Syntax: set ErrorLog clear
 get ErrorLog
Returns: [*Error Logs Cleared* |
 The last error code saved was xx
 A xxx type error was detected since last error log clearing
 Specific error text]
Where xxx is : [960 |Static Memory | Synchronous DRAM | ISP2100 |
 Symbios 896 A | Symbios 896 B | FibreChannel | Software]
and Specific error text is one line of descriptive error text.

ErrorLog for ATTO FibreBridge 2200R/D and 3200R

Syntax: set ErrorLog clear
 get ErrorLog
Returns: [*Error Logs Cleared* |
 The last error code saved was xx
 A xxx type error was detected since last error log clearing
 Specific error text]
Where xxx is : [960 |Static Memory | Synchronous DRAM | ISP2200 |
 Symbios 896 A | Symbios 896 B | FibreChannel | Software]
and Specific error text is one line of descriptive error text.

IdentifyFibreBridge

Syntax: set IdentifyFibreBridge [enabled | disabled]
 get IdentifyFibreBridge
Returns:
 (terse) [*enabled* | *disabled*]
 (verbose) *IdentifyFibreBridge = [enabled | disabled]*

Enabling this option will cause the 'Ready' LED on the front panel of the FibreBridge to blink. The LED will continue to blink until this parameter is disabled.

DispEvent

Syntax: set DispEvent [*subsystem*][*event_level*][*status*]
 get DispEvent
Returns:
 (terse) XX XX [*all* | *ngood*]
 (verbose) *DispEvent = SubSys:XX Lvl:XX Status:[all | ngood]*

The DispEvent command sets the switches which control the filtering performed when displaying events. The switches have the following meanings and possible settings:

[subsystem] switch is a mask that controls which subsystem's events are displayed.
 The mask is a byte value with the following bit patterns corresponding to the currently supported subsystems:

01	FCP Processor/i960 Interaction
02	SCSI Processor/i960 Interaction
04	Ethernet
10	GBIC Connector
20	NVRAM & Flash

To display the events from several different subsystems, use a mask value equal to

the logical OR of the corresponding subsystem values. To display events from all subsystems enter the value 3Fh for the mask. The default value is 3Fh.

[event_level] switch is a mask that controls what reporting level events are displayed. The mask is a byte value with the following bit patterns corresponding to the currently supported reporting levels:

- 01** Info; general information
- 02** Warning; unexpected situation/condition
- 04** Critical; operation limited/curtailed
- 08** Failure; hard failure
- 10** Other; otherwise not categorisable
- 20** Debug; ATTO tracking events

To display events from several different reporting levels, use a mask value equal to the logical OR of the corresponding reporting levels. To display events for all reporting levels enter the value 3Fh for the mask. The default value is 3Fh.

[status] switch has two values which correspond to the status of the events to be displayed. The value **all** dictates that all events, regardless of their status values are displayed. The value **ngood** dictates that only events with a status value other than good are displayed. This switch only pertains to those events for which there is a status value. The default value is **all**.

LogEvent

Syntax: set LogEvent [enabled | disabled][[[subsystem][[event_level][[status]]]]
get LogEvent

Returns:

- | | |
|-----------|---|
| (terse) | <i>[enabled disabled] XX XX [all ngood]</i> |
| (verbose) | <i>LogEvent =[enabled disabled] SubSys:XX Lvl:XX Status:[all ngood]</i> |

The LogEvent command sets the switches which control the filtering performed when logging events. The switches have the following meanings and possible settings:

[enabled | disabled] switch controls whether or not events logging is enabled or disabled. The default value is **disabled**.

[subsystem] switch for LogEvent is the same as that described for DispEvent in the previous section.

[event_level] switch for LogEvent is the same as that described for DispEvent in the previous section.

[status] switch for LogEvent is the same as that described for DispEvent in the previous section.

[type] switch for LogEvent is the same as that described for DispEvent in the previous section.

ClearEvent (*Immediate*)

Syntax: ClearEvent
Returns: n/a

The ClearEvent command clears the contents of the event log.

DisplayEvent (*Immediate*)

Syntax: DisplayEvent <all>

Returns: *The contents of the event log, as filtered by the current switch settings manipulated via DispEvent.*

The DisplayEvent command results in a dump of the current contents of the event log to the display. The log is filtered by the current switch settings as described in the DispEvent section. If the optional all delimiter is provided, the display filtering is temporarily suspended and all logged events are displayed regardless of the current event filter switch settings.

Ethernet Configuration Commands (ATTO FibreBridge 3100R and 3200R)

The ethernet configuration commands are meant to configure the ethernet and TCP/IP parameters.

IPDHCP

Syntax: set IPDHCP [enabled | disabled]
get IPDHCP

Returns:
(terse) [enabled | disabled]
(verbose) IPDHCP = [enabled | disabled]

Selecting DHCP allows the ATTO FibreBridge to request an IP address from the network. It requires that the bridge be attached to a network with at least one DHCP server.

IPAddress

Syntax: set IPAddress xxx.xxx.xxx.xxx
get IPAddress

Returns:
(terse) xxx.xxx.xxx.xxx <(DHCP)>
(verbose) IPAddress = xxx.xxx.xxx.xxx <(DHCP)>

Set/Display the current IP address of the ATTO FibreBridge. Note that the ATTO FibreBridge's local hostname is the same as the FibreBridge Name specified above. If IPDHCP is enabled, then the get command reports the current IP address assigned by the nameserver.

IPGateway

Syntax: set IPGateway xxx.xxx.xxx.xxx
get IPGateway

Returns:
(terse) xxx.xxx.xxx.xxx
(verbose) IPGateway = xxx.xxx.xxx.xxx

Set/Display the current default gateway.

IPSubnetMask

Syntax: set IPSubnetMask xxx.xxx.xxx.xxx
get IPSubnetMask

Returns:
(terse) xxx.xxx.xxx.xxx <(DHCP)>
(verbose) IPSubnetMask = xxx.xxx.xxx.xxx <(DHCP)>

Set/Display the current subnet mask. If IPDHCP is enabled, then the get command reports the current IP gateway assigned by the nameserver.

EthernetSpeed

Syntax: set EthernetSpeed [10 | 100 | auto]
get EthernetSpeed

Returns

(terse) [10 | 100 | auto ([10|100|UNKNOWN])]
(verbose) EthernetSpeed = [10 | 100 | auto ([10|100|UNKNOWN])]

Set/Display the ethernet speed. Auto will auto-negotiate speed (default).
If Auto is enabled the value in parentheses indicates the current speed of the ethernet connection.

Miscellaneous Commands

Info (*Immediate*)

Syntax: Info

Returns:

(terse) "ATTO FibreBridge XX00"
"xxxx"
"xxxx"
"Month Day Year 'Build Time'"
"xx"
"x.xx"
"x.xx.xx"
"[SE | HVD | LVD]"
"[SE | HVD | LVD]"
(verbose) Device = "ATTO FibreBridge"
Device Version = xxxx
Device Build = xxxx
Build Date = Month Day Year 'Build Time'
NVRAM Revision = xx
CLI Revision = x.xx
FC Firmware Revision = x.xx.xx
SCSI Port 1 = "[SE | HVD | LVD]"
SCSI Port 2 = "[SE | HVD | LVD]"

This option displays version numbers and other product information for key components within the ATTO FibreBridge.

Help (*Immediate*)

Syntax: Help [Command Name]

Returns:

(terse) usage
(verbose) usage + help text...

The Help command displays a list of available commands. When the optional command name is present, detailed command-specific information will be displayed.

Menu (*Immediate*)

Syntax: Menu <[enabled | disabled]>
Returns: n/a

The Menu command turns the menu interface on or off. Turning on the menu interface will cause the main menu to be displayed. In addition, other parameters will be enabled such as ECHO. 'Menu Disabled' will turn off the menu interface. Menu without any parameters will toggle the current menu state.

RestoreConfiguration (*Immediate*)

Syntax: RestoreConfiguration [Default | Saved]
Returns: n/a

The ATTO FibreBridge configuration being edited will be restored to either the factory default configuration or the configuration last saved into non-volatile memory. Note that this will not impact the current operating ATTO FibreBridge configuration. This configuration must be saved for the configuration changes to take effect. There is no get version of this command.

SaveConfiguration (*Immediate*)

Syntax: SaveConfiguration <Restart | NoRestart>
Returns: [Configuration Saved. |
Restart is necessary....
Do you wish to restart (y/n) ?|
Restarting...]

The configuration image being accessed by these services will be permanently saved in the ATTO FibreBridge. This new configuration will become the active configuration immediately. If a firmware restart is required to make the requested change, the user will be prompted for a confirmation of the restart. The user can override this confirmation request by indicating the override value on the command line.

Note that the Restart or NoRestart parameter is **optional**.

Reserve (*Immediate*)

Syntax: Reserve
Returns :
(terse) [enabled | disabled]
(verbose) Reserve=[enabled | disabled]

Reservation of the ATTO FibreBridge is implicit: once the configuration image is changed by any user of services (Serial/Ethernet/Etc.,) the ATTO FibreBridge becomes **RESERVED**. Executing a SaveConfiguration, RestoreConfiguration or FcRestart will **RELEASE** the ATTO FibreBridge so that other devices may access it.

When the ATTO FibreBridge services interface is reserved, Set commands are unavailable, but Get commands are available. Note that at least one service interface must be available to the ATTO FibreBridge at all times. This interface will always report **RELEASED** status, since it may issue set commands.

VerboseMode

Syntax: set VerboseMode [enabled | disabled]
get VerboseMode

Returns :

(terse) [enabled | disabled]
(verbose) VerboseMode = [enabled | disabled]

Setting verbose mode will cause the command-line interface to display extended information about a parameter when the 'help' command is given. Only the parameter value is output when verbose mode is disabled.

Chapter 4: Menu Interface for ATTO FibreBridge 2200 R/D, 3100R and 3200R

Menu Interface

This section describes the Menu Interface method of accessing ATTO FibreBridge services. The ATTO FibreBridge service options are accessible using a Command Line Interface (CLI). The CLI is designed for advanced programmers and integrators. To see a list of available commands type 'help' at the Ready prompt.

The menu interface provides a user-friendly way of configuring and managing the ATTO FibreBridge product module and may be invoked at the CLI Ready prompt by typing 'menu'. CLI commands may NOT be entered while the menu interface is enabled. Typing 'menu' at any menu prompt will return the user back to the command-line interface. Any parameter modification prompts may be cancelled by pressing 'Enter' at the prompt without typing a value. Confirmation prompts must be answered with 'y' or 'n'.

To access menu options type the letter of the option as it appears on the display followed by a carriage return or Enter. To return to a previous menu, type 'x' then carriage return or Enter. Note: *The ATTO FibreBridge Services Menu Interface is not case sensitive. (Use of upper or lower case letters is permitted).*

Main Menu

This is the starting point for the Menu Interface. All other menus are descendants of this menu.

	FibreBridge Main Menu	Notes
A	FibreBridge Configuration...	Provides option for configuring the unit
B	FibreBridge Maintenance...	Provides options for performing maintenance on the unit
C	FibreBridge Diagnostics...	Provides options to view or clear the current error log
D	Save / Restore Configuration...	Restores the manufacturer's default settings
X	Exit Menu Mode	Exit the menu and return to the CLI

ATTO FibreBridge Configuration Menu

	FibreBridge Configuration Menu	Notes
A	FibreBridge Name	Prompt for FibreBridge name
B	Fibre Channel Configuration...	Provides options for configuring the Fibre Channel interface
C	SCSI Port 1 Configuration...	Provides options for configuring SCSI port 1
D	SCSI Port 2 Configuration...	Provides options for configuring SCSI port 2
E	Serial (RS-232) Port Configuration...	Provides options for reconfiguring the RS-232 interface
F	Network Configuration...	Provides options for configuring the IP address and parameters
X	Return to previous menu...	Return to the Main Menu

ATTO FibreBridge Maintenance Menu

FibreBridge Maintenance Menu		Notes
A	LIP Fibre Channel Port	Force LIP on Fibre Channel port
B	Display FibreBridge Version Information	Display the initial status screen
C	Restart FibreBridge Firmware	Cause the unit to reload the firmware and restart the ATTO FibreBridge
D	Reset SCSI Port 1	Force reset on SCSI port 1
E	Reset SCSI Port 2	Force reset on SCSI port 2
X	Return to previous menu...	Return to the ATTO FibreBridge main menu

ATTO FibreBridge Diagnostic Menu

FibreBridge Diagnostic Menu		Notes
A	Display Error Log	Display the current error log entries. Entries in the log do not necessarily mean that the unit is damaged or inoperable
B	Clear Error Log	Clears the current error log
C	Identify FibreBridge	Identifies the ATTO FibreBridge in use
X	Return to previous menu...	Return to the ATTO FibreBridge main menu

Save / Restore Configuration Menu

Save / Restore Configuration Menu		Notes
A	Save Configuration Changes	Restart/No Restart Prompt
B	Restore Configuration to Default	Confirmation Prompt
C	Restore Configuration to Last Saved	Confirmation Prompt
X	Return to previous menu...	Return to the FibreBridge Main Menu

Fibre Channel Configuration Menu

Fibre Channel Configuration Menu		Notes
A	FC-AL Hard Addressing Mode	Display, Enable or Disable FC-AL hard Addressing
B	FC-AL Hard Address	Display or set the FC-AL hard address is Hard Address mode is enabled
C	FC-AL Arbitration Fairness	Display, Enable or Disable Arbitration Fairness
D	Unprocessed SCSI Command Returns	Provides options for configuring SCSI port 1BUSY/QUEUE FULL response
E	Fibre Channel Frame Length	Display or set the Fibre Channel frame length
F	Physical Device Address Descriptor	Display or set the PDAM descriptor
G	Logical Unit Address Descriptor	Display or set the LUAM descriptor
H	Virtual Device Address Descriptor	Display or set the VDAM descriptor
I	FC-AL Address Translation	Display, Enable or Disable FC to SCSI Address Translation
J	FibreBridge Soft SCSI ID Status	Display, Enable or Disable weather the hardware or software SCSI ID is used for the ATTO FibreBridge unit
K	FibreBridge SCSI ID	Display or set the soft SCSI ID of the ATTO FibreBridge unit. This is the target ID to which the ATTO FibreBridge itself will respond to SCSI commands sent to the ATTO FibreBridge itself rather than to SCSI devices attached to it
L	Full Duplex Mode (FibreBridge 2200R/D and 3200R)	Display, Enabled or Disable Full Duplex
M	Port Connection Mode (FibreBridge 2200R/D and 3200R)	Display Prompt for connection mode

Fibre Channel Configuration Menu cont.'d

N	Class 2 Service Parameters (FibreBridge 2200R/D and 3200R)	Display, Enable or Disabled Class 2 Service Parameters
O	Use ACK0 for Class 2 Service (FibreBridge 2200R/D and 3200R)	Display, Enabled or Disabled ACK0 for Class 2 Service
P	Fibre Channel Initiator Mode	Enable / Disable Initiator Mode
X	Return to previous menu...	->FibreBridge Configuration Menu

SCSI Port Configuration Menu

	SCSI Port x Configuration Menu	Notes
A	Initiator ID from Hardware Switch	Display, Enable or Disable use of the hardware SCSI initiator ID for the SCSI bus. Note, this differs from the ATTO FibreBridge SCSI ID option which sets the use of a soft or hardware ID of the ATTO FibreBridge itself
B	SCSI Initiator ID	Display or set the SCSI initiator ID of the SCSI bus
C	Reset SCSI Bus on Startup	Display, Enable or Disable whether the SCSI bus resets on startup of the unit
D	Tagged Command Queuing	Display, Enable or Disable use of Tagged Command Queuing
E	Wide SCSI Transfers	Display, Enable or Disable forced (as opposed to negotiated) Wide SCSI transfers
F	Synchronous SCSI Transfers	Display, Enable or Disable Synchronous SCSI transfers
G	SCSI Bus Speed	Displays the transfer rate at which the FibreBridge will attempt to negotiate with its SCSI devices.
H	Selection Timeout	Display or set the selection timeout for the SCSI bus
X	Return to previous menu...	Return to the ATTO FibreBridge configuration menu

Serial Port Configuration Menu

	Serial Port Configuration Menu	Notes
A	Baud Rate	Display or set the baud rate for the RS-232 port. The baud rate may be set to 2400, 9600, 19200, 38400, 57600 or 115200 baud
B	Flow Control (Handshaking)	Display or set the current handshaking mode. The handshaking mode may be set to hard (hardware), xon (Xon/Xoff) or none
C	Stop Bits	Display or set the number of bits. The ATTO FibreBridge supports 1 or 2 stop bits
X	Return to previous menu...	Return to the ATTO FibreBridge configuration menu

Network Configuration Menu

Network Configuration Menu		Notes
A	Ethernet Speed	Display or set Ethernet port speed. Selections include Auto (autodetect), 10Base-T, and 100Base-T
B	IP Address	Display or set current IP address. The default address is 192.168.1.0
C	IP Gateway	Display or set the current IP gateway address
D	IP Subnet Mask	Display or set current IP subnet mask. The default subnet is 255.255.255.0
X	Return to previous menu...	Return to the ATTO FibreBridge main menu

Chapter 5:ATTO FibreBridge SCSI Commands

This chapter describes the SCSI commands that are processed by the ATTO FibreBridge.

INQUIRY command

The INQUIRY command requests that information regarding parameters of the target and a component logical unit is sent to the application client.

If an INQUIRY command is received from an initiator with a pending unit attention condition (i.e., before the ATTO FibreBridge reports CHECK CONDITION status), the ATTO FibreBridge will perform the INQUIRY command and will not clear the unit attention condition.

Byte	7	6	5	4	3	2	1	0
0	Operation code (12h)							
1	Reserved							EVPD
2	Page Code							
3	Reserved							
4	Allocation length							
5	Control							

Standard INQUIRY data format

Byte	7	6	5	4	3	2	1	0				
0	Peripheral Qualifier				Peripheral device type							
1	0	Reserved										
2	ISO version		ECMA version			ANSI version						
3	AERC	0	NACA	HiSup	Response data format							
4	Additional length (n-4)											
5	0	Reserved										
6	0	1	0	0	0	0	0	0				
7	0	0	0	0	0	0	TCQ	0				
8	(MSB)	Vendor identification						(LSB)				
15	(MSB)	Product identification						(LSB)				
31	(MSB)	Product revision level						(LSB)				
32	(MSB)							(LSB)				
36												

Field	Definition
Peripheral qualifier	<p>The peripheral qualifier is used with the peripheral device type field to identify the device currently connected to the logical unit. The peripheral qualifier field may take on the following values:</p>
	<p>000b = The specified peripheral device type is currently connected to this logical unit. This peripheral qualifier does not mean that the device is ready for access by the initiator.</p>
	<p>001b = The FibreBridge is capable of supporting the specified peripheral device type on this logical unit. However, the physical device is not currently connected to this logical unit.</p>
	<p>011b = The FibreBridge is not capable of supporting a physical device on this logical unit. For this peripheral qualifier, the peripheral device type will be set to 1Fh.</p>
Peripheral device type	<p>The peripheral device type field indicates the type of peripheral on this logical unit.</p>
	<p>03h = Processor type device. The FibreBridge responds as a processor type device.</p>
	<p>1Fh = Unknown or no device type.</p>
ISO version	<p>The FibreBridge does not claim compliance with the ISO version of SCSI. This field will be set to 00b.</p>
ECMA version	<p>The FibreBridge does not claim compliance with the ECMA version of SCSI. This field will be set to 00b.</p>
ANSI version	<p>The ANSI version field will be set to 3h indicating compliance with ANSI X3.301-1997.</p>
AERC	<p>The Asynchronous event reporting capability field will be set to 0b.</p>
NACA	<p>The Normal ACA Supported bit will be set to 0b.</p>
HiSup	<p>The Hierarchical support bit indicates if the FibreBridge is configured to implement Hierarchical LUN addressing. See the section on LUN Address Methods for additional information.</p>
Additional length	<p>The additional length field specifies the length in bytes of the parameters. If the allocation length of the command descriptor block is too small to transfer all of the parameters, the additional length is not be adjusted to reflect the truncation.</p>
TCQ	<p>The TCQ field will be set to 1b to indicate support for command queuing.</p>
Vendor identification	<p>The Vendor identification field is set to 'ATTO' and padded with spaces.</p>
Product identification	<p>The Product identification field is set to 'FibreBridge xxxx', where xxxx is the four-digit ATTO model number of the specific FibreBridge.</p>
Product revision level	<p>The product revision level field is set to the current firmware revision level. The revision consists of four ASCII characters.</p>

Field	Definition
-------	------------

Vital Product Data

The Peripheral Qualifier and the Peripheral Device Type in the inquiry vital product data pages are described in the standard Inquiry data format above.

When EVPD (Enable Vital Product Data) is 1, PageCode indicates which page of vital product data is to be returned. The ATTO FibreBridge supports the following Vital Product Data pages:

PageCode	Description	Comments
0x00	Supported Vital Product Data Page List	reports valid PageCodes
0x82	ASCII Implemented Operating Definition Pages	reports Model Information
0x83	Device Identification Page	reports World Wide Name

Supported Vital Product Data pages

Bit Byte	7	6	5	4	3	2	1	0
0	Peripheral Qualifier							Peripheral device type
1								PageCode (0x00)
2								Reserved
3								Page Length (n-3)
4								Supported
...								Vital Product
n								Data Pages

ASCII Implemented Operating Definition Pages

Bit Byte	7	6	5	4	3	2	1	0
0	Peripheral Qualifier							Peripheral device type
1								PageCode (0x82)
2								Reserved
3								Page Length (n-3)
4								ASCII implemented operating definition description length (n-4)
5								ASCII implemented operating definition description data
...								
N								

ASCII implemented operating definition page data is in the form <name>=<value><0>, where <name> represents the entity name, <value> represents the ATTO FibreBridge model information, and <0> represents a null separator. The supported names are:

- NAME optional user specified (8 characters) name associated with the ATTO FibreBridge
- B software build number (4 characters)
- M total memory capacity including software space and data space, expressed in MBs.
- SCSI SE (single ended) or DF (differential).

An example of ASCII Implemented Operating Definition page:

- <00><82h><0><23h><22h>NAME=VIDEOLAB<0>B=0021<0>M=64<0>SCSI=SE<0>

Device Identification Page

The Device Identification Page provides the ATTO FibreBridge WorldWideName in binary. The description below shows the generic Device Information Page.

Byte	Bit	7	6	5	4	3	2	1	0
0	Peripheral Qualifier								Peripheral device type
1									PageCode (0x83)
2									Reserved
3									Page Length (n-3)
4									Identification Descriptor List
									Identification Descriptor (first)
n									Identification Descriptor (last)

Identification Descriptor

Byte	Bit	7	6	5	4	3	2	1	0
0	Reserved								Code Set
1	Reserved			Association					Identifier Type
2									Reserved
3									Identifier Length (m-3)
4									Identifier
M									

The ATTO FibreBridge returned page contains 1 Identification Descriptor, containing the 8 byte binary WorldWideName.

ATTO FibreBridge WorldWideName

Byte	Bit	7	6	5	4	3	2	1	0
0	Peripheral Qualifier								Peripheral device type
1									PageCode (0x83)
2									Reserved
3									Page Length (0x0c)
4									Code Set (01)
5	Reserved			Association (1)					Identifier Type (0)
6									Reserved
7									Identifier Length (8)
8									WorldWideName
15									

A WorldWideName is of the form: 20 00 00 10 86 xx yy zz, where xx yy zz represent the unique device name as set by ATTO.

READ 7BUFFER command

The READ BUFFER command is used in conjunction with the WRITE BUFFER command as a maintenance function for reading and writing microcode and configuration information. The READ BUFFER command provides access to microcode and configuration parameter storage.

Byte	Bit	7	6	5	4	3	2	1	0
0									Operation code (3Ch)
1							0	1	0
2						Buffer ID			
3		(MSB)							
4					Buffer Offset				
5									(LSB)
6		(MSB)							
7					Allocation length				
8									(LSB)
9						Control			

The function of the command and meaning of the returned data depends upon the contents of the Buffer ID field. The Buffer ID field identifies a specific buffer within the ATTO FibreBridge from which data will be transferred. The ATTO FibreBridge will transfer the complete buffer or the allocation length bytes, whichever is less.

The Buffer Offset field contains the byte offset within the specified buffer from which data will be transferred. If the specified buffer offset is invalid, the ATTO FibreBridge will return a CHECK CONDITION status with a sense key of ILLEGAL REQUEST and additional sense code of INVALID FIELD IN CDB.

If an unsupported Buffer ID code is selected, the ATTO FibreBridge will return a CHECK CONDITION status with a sense key of ILLEGAL REQUEST and additional sense code of INVALID FIELD IN CDB.

REPORT LUNS command

The REPORT LUNS command requests that the peripheral device logical unit numbers of known logical units in the ATTO FibreBridge be sent to the host. The REPORT LUNS command shall return information about only those logical units to which commands may be sent. The REPORT LUNS command will only be accepted by logical unit number zero.

Bit Byte	7	6	5	4	3	2	1	0
0								Operation code (A0h)
1								Reserved
2								Reserved
3								Reserved
4								Reserved
5								Reserved
6	(MSB)							
7								Allocation length
8								
9								(LSB)
10								Reserved
11								Control

The Allocation length shall be at least 16 bytes. If the Allocation length is less than 16 bytes, the ATTO FibreBridge will return a CHECK CONDITION status. The sense key will be set to ILLEGAL REQUEST and the additional sense data will be set to INVALID FIELD IN CDB.

If the Allocation length is not sufficient to contain the logical unit number values for all configured logical units, the ATTO FibreBridge will report as many logical unit number values as will fit in the specified Allocation length. This will not be considered an error.

The ATTO FibreBridge will report the logical unit numbers of configured logical units using the format shown below.

REPORT LUNS parameter list format

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB)							
3								LUN list length (n-7) (LSB)
4	(MSB)							Reserved (LSB)
7								LUN list (LSB)
8	(MSB)							First LUN (LSB)
15								.. (LSB)
								.. (LSB)
n-7	(MSB)							Last LUN (LSB)
N								

The LUN list length will contain the length in bytes of the LUN list that is available to be transferred. The LUN list length is the number of logical unit numbers reported multiplied by eight. If the allocation length in the command descriptor block is too small to transfer information about all configured logical units, the LUN list length value will not be adjusted to reflect the truncation.

Request Sense Command

Byte	Bit 7	6	5	4	3	2	1	0
0					Operation code (03h)			
1		Logical Unit Number				Reserved		
2					Reserved			
3					Reserved			
4					Allocation Length			
5					Control			

The Request Sense command requests that the target transfer sense data to the initiator.

The sense data returned for a FibreBridge command is a subset of the sense data described in the SCSI standard.

TEST UNIT READY command

The TEST UNIT READY command checks to see if the logical unit is ready. If the logical unit is able to accept an appropriate medium-access command without returning CHECK CONDITION status, this command shall return a GOOD status.

Byte	Bit 7	6	5	4	3	2	1	0
0					Operation code (00h)			
1					Reserved			
2					Reserved			
3					Reserved			
4					Reserved			
5					Control			

WRITE BUFFER command

The WRITE BUFFER command is used in conjunction with the READ BUFFER command as a maintenance function for reading and writing microcode and configuration information. The WRITE BUFFER command allows microcode to be updated and configuration parameters to be modified.

Byte	Bit 7	6	5	4	3	2	1	0
0					Operation code (3Bh)			
1					Reserved	Mode		
2					Buffer ID			
3	(MSB)							
4					Buffer Offset			
5							(LSB)	
6	(MSB)							
7					Parameter list length			
8							(LSB)	
9					Control			

The function of the command and meaning of the returned data depends upon the contents of the Buffer ID field. The Buffer ID field identifies a specific buffer within the ATTO FibreBridge from which data will be

transferred. The ATTO FibreBridge will transfer the complete buffer or allocation length bytes, whichever is less.

The Buffer Offset field contains the byte offset within the specified buffer from which data will be transferred. If the specified buffer offset is invalid, ATTO FibreBridge will return a CHECK CONDITION status with a sense key of ILLEGAL REQUEST and additional sense code of INVALID FIELD IN CDB.

If an unsupported Buffer ID code is selected, the ATTO FibreBridge will return a CHECK CONDITION status with a sense key of ILLEGAL REQUEST and additional sense code of INVALID FIELD IN CDB.

Read/Write Buffer buffer id descriptions and usage are provided in the ATTO Technology ATTO FibreBridge NVRAM Specification. ATTO Technology provides the ATTO BridgeTools GUI-based utility to facilitate managing the NVRAM parameters.

RECEIVE DIAGNOSTIC RESULTS command

The RECEIVE DIAGNOSTIC RESULTS command is used in conjunction with the SEND DIAGNOSTIC command as a maintenance function for reading the status of the ATTO FibreBridge and/or results of any previous SEND DIAGNOSTIC command.

Bit Byte	7	6	5	4	3	2	1	0								
0	Operation code (1Ch)															
1	Reserved						PCV									
2	Page code															
3	(MSB)		Allocation Length													
4																
5	Control															

A Page Code Valid (PCV) bit of zero indicates that the most recent SEND DIAGNOSTIC command shall define the page code used for data returned by this command. A PCV bit of one indicates that the contents of the Page code field shall define the data returned by this command. Page code values are as follows:

Page Code	Definition
00	Supported Pages
01	Configuration
02	Enclosure Status
08	Short Status

Pages are defined below:

Supported pages page (See 8.1.1 in T10/1236-D SPC-2)

Byte	0	1	2	3
0	00	00	00	Number of Supported Pgs.
4-n	Supported Pages (variable length)			

The ‘Supported Pages’ page allows the user to query for valid Page Code numbers.

The ‘Configuration’ page (following) describes the format of the Enclosure status page. There is one entry in the configuration page for each Element Type described by the Enclosure status page.

Configuration Page

Byte (decimal)	0	1	2	3
0	01	00	Pg. Length	
4	Generation Code (Fixed at 00 00 00 00)			
8	00	00	# Element Types	Enclosure Descriptor Len (m)
12	Bridge WWN			
16				
20	“ATTO” space padded to right			
24				
28				
32	“FibreBridge XXXX” space padded to right, where XXXX is the four-digit ATTO model number of the specific FibreBridge			
36				
40				
44	Revision, in ASCII, space padded to right			
48 – (11+m)	First Element Type	Possible # of Elements of This Type	Sub-Enclosure Id. (0)	Descriptor ASCII Length
52	...			
56	Last Element Type	Possible # of elements of this Type	Sub Enclosure Id. (0)	Descriptor ASCII Length
84	ASCII String for First Element Type			
90	...			
102	ASCII String For Last Element Type			

Enclosure Status Page for ATTO FibreBridge 2100R

Byte	0	1	2	3
0	02	Status Bits	00	0x58
4		Generation Code (fixed at 00 00 00 00)		
8		Overall Status – Device		
12		Element Status – Device		
16		Overall Status – Power Supply		
20		Element Status – Power Supply A		
24		Element Status – Power supply B		
28		Overall Status – Temperature Sensor		
32		Element Status – Temperature Sensor		
36		Overall Status – SCSI Ports		
40		Element Status – SCSI Port 1		
44		Element Status – SCSI Port 2		
48		Overall Status – Language		
52		Element Status - Language		
56		Overall Status – Fibre Port		
60		Element Status – Fibre Port		
64		Overall Status – Fibre Chain		
68		Element Status – Fibre Chain 1		
72		Element Status – Fibre Chain 2		
76		Overall Status – POST Code		
80		Element Status – POST Code		
84		Overall Control – NVRAM Reset		
88		Element Control – NVRAM Reset		

The Enclosure Status Page contains one entry for each status element reported by the ATTO Fibre Bridge. (See Element Definitions – Below.)

Enclosure Status Page for ATTO FibreBridge 2200R/D, 3100R and 3200R

Byte	0	1	2	3
0	02	Status Bits	00	0x58
4	Generation Code (fixed at 00 00 00 00)			
8	Overall Status – Device			
12	Element Status – Device			
16	Overall Status – Power Supply			
20	Element Status – Power Supply A			
24	Element Status – Power supply B			
28	Overall Status – Temperature Sensor			
32	Element Status – Temperature Sensor			
36	Overall Status – SCSI Ports			
40	Element Status – SCSI Port 1			
44	Element Status – SCSI Port 2			
48	Overall Status – Language			
52	Element Status - Language			
56	Overall Status – GBIC Ports			
60	Element Status – GBIC Port 1			
64	Element Status – GBIC Port 2			
68	Overall Status – POST Code			
72	Element Status – POST Code			
76	Overall Control – NVRAM Reset			
80	Element Control – NVRAM Reset			

The Enclosure Status Page contains one entry for each status element reported by the ATTO Fibre Bridge. See Element Definitions – Below.)

Short Status Page

Byte	0	1	2	3
0	08	Overall Status	00	00

The Short Status page Contains one Overall Status byte, which contains the same information as the 'Common Status' byte of the Overall Status – Device field from the Enclosure Status page.

Common Status

Bit Byte	7	6	5	4	3	2	1	0
0	Reserved							

Where Status Code is

00h	Unsupported
01h	OK
02h	Critical Error
03h	Noncritical Error
04h	Unrecoverable Error
05h	Not Installed
06h – 0Fh	Reserved

Element Definitions:

Device Element for Status Page

Bit Byte	7	6	5	4	3	2	1	0
0					Common Status			
1					Slot Address			
2	0	0	0	0	0	0	IDENT	1
3	0	Fault Sensed	Fault Reqstd	0	0	0	0	0

Slot Address: SCSI ID of this bridge (thumbwheel switch #1).**Ident:** Set to indicate the Identification control bit has been set.**Fault Sensed :** Set to indicate a fault detected by this bridge.**Fault Reqst:** Set to indicate that the RQST FAULT control bit has been set.

Power Supply Element for Status Page

Bit Byte	7	6	5	4	3	2	1	0
0					Common Status			
1					Reserved			
2			Reserved		0	0	0	0
3	0	0	0	Off	0	0	0	DC Fail

Off: Set if this power supply is off.**DC Fail:** Set if this power supply is not supplying DC Power.

Temperature Sensor Element for Status Page

Bit Byte	7	6	5	4	3	2	1	0
0					Common Status			
1					Reserved			
2					Temperature			
3			Reserved		OT Failure	OT Warning	UT Failure	UT Warning

Temperature: Degrees Celsius-20. (cannot be 0)**OT Failure/Warning:** Overtemperature status. Warning occurs at +40C. Error occurs at +50C.**UT Failure/Warning:** Under Temperature status. Warning Occurs at +5C. Error occurs at 0C.

SCSI port/transceiver Element for Status Page

Bit Byte	7	6	5	4	3	2	1	0
0					Common Status			
1					Reserved			
2					Reserved			0
3			Reserved		Disable d	Reserved	0	Xmit fail

Disabled: Indicates that the port has been disabled.

Xmit Fail: Indicates that the port's transmitter has failed.

Language Element For Status Page

Bit Byte	7	6	5	4	3	2	1	0
0								Common Status
1								Reserved
2								
3								0000

FibreBridge/transceiver Element for Status Page

Bit Byte	7	6	5	4	3	2	1	0
0								Common Status
1								Reserved
2								
3								Reserved Xmit fail Reserved Online Mode

Online Mode: 00 : Normal – ATTO Fibre Bridge determines Online/Off Line status.
 01 : Force Online – Fibre Channel is always Online.
 02 : Force Offline – Fibre Channel is disabled until POR or re-enabled via FibreChain.

ATTO FibreBridge GBIC Connector Element for Status Page (3100R and 3200R only)

Bit Byte	7	6	5	4	3	2	1	0
0								Common Status
1								Reserved
2								
3								Reserved Xmit fail Reserved Online Mode

Online Mode: 00 : Normal – ATTO FibreBridge determines Online/Offline status
 01 : Force Online - Fibre Channel is always Online
 02 : Force Offline - Fibre Channel is disabled until POR

Fibre Chain Element for Status Page (2100R only)

Bit Byte	7	6	5	4	3	2	1	0
0								Common Status
1								Reserved
2								
3								Reserved Disabld Reserved

Status: Reports whether FibreChain is attached,etc.

Disabled: Shows status of Fibre Chain 'Disabled' Configuration Element.

POST Code Element for Status Page

Byte	Bit	7	6	5	4	3	2	1	0
0		Common Status							
1		Reserved							
2		POST Code							
3		Type Error							
		SWerr	FCerr	P876Berr	P876Aerr	P2100err	SDRAMerr	SRAMerr	P960err

POST Code: 1-byte value stored internally. May indicate an error which has been cleared. Is not cleared by power-on or soft reset.

Type Error : 1-byte error type. May indicate an error which has been cleared. Is not cleared by power-on or soft reset.

NVRAM Reset Element for Status Page

Byte	Bit	7	6	5	4	3	2	1	0
0		Common Status							
1		00							
2		00							
3		00							

(status is always 00)

SEND DIAGNOSTIC command

The SEND DIAGNOSTIC command is used as a maintenance function for commanding ATTO FibreBridge reset, as well as en/disabling various ATTO FibreBridge components.

Byte	Bit	7	6	5	4	3	2	1	0
0		Operation code (1Dh)							
1		Reserved			PF	Reservd	SelfTest	DevOffL	UnitOff L
2		Reserved							
3		(MSB) Parameter List length							
4									
5		Control							

A Page Code Valid (PF) bit of one indicates that the parameters conform to the page structure as specified in the standard. Users of the ATTO FibreBridge should always set PF to 1.

Setting the SelfTest bit in conjunction with the DevOffL bit causes the ATTO FibreBridge to reset itself, perform power on self-test, then continue operation. To avoid possible command errors in multi-initiator systems, The ATTO FibreBridge should be RESERVED before issuing a SelfTest Command.

The SEND DIAGNOSTIC parameter list must contain Control data, in the format of the Enclosure Control page, in order to complete properly. Note that the complete Enclosure Control page must be sent with every SEND DIAGNOSTIC command.

Enclosure Control Page for ATTO FibreBridge 2100R

Byte	0	1	2	3
0	02	Cond. Bits	00	0x48
4		Generation Code		
8		Overall Control – Device		
12		Element Control – Device		
16		Overall Control – Power Supply		
20		Element Control – Power Supply A		
24		Element Control – Power supply B		
28		Overall Control – Temperature Sensor		
32		Element Control – Temperature Sensor		
36		Overall Control – SCSI Ports		
40		Element Control – SCSI Port 1		
44		Element Control – SCSI Port 2		
48		Overall Control – Language		
52		Element Control – Language		
56		Overall Control – Fibre Port		
60		Element Control – Fibre Port		
64		Overall Control – Fibre Chain		
68		Element Control – Fibre Chain 1		
72		Element Control – Fibre Chain 2		
76		Overall Control – POST Code		
82		Element Control – POST Code		
86		Overall Control – NVRAM Reset		
90		Element Control – NVRAM Reset		

Generation Code – must be 0.

Enclosure Control Page for ATTO FibreBridge 3100R and 3200R

Byte	0	1	2	3
0	02	Cond. Bits	00	0x48
4		Generation Code		
8		Overall Control – Device		
12		Element Control – Device		
16		Overall Control – Power Supply		
20		Element Control – Power Supply A		
24		Element Control – Power supply B		
28		Overall Control – Temperature Sensor		
32		Element Control – Temperature Sensor		
36		Overall Control – SCSI Ports		
40		Element Control – SCSI Port 1		
44		Element Control – SCSI Port 2		
48		Overall Control – Language		
52		Element Control – Language		
56		Overall Control – GBIC Ports		
60		Element Control – GBIC Port 1		
64		Element Control – GBIC Port 2		
68		Overall Control – POST Code		
72		Element Control – POST Code		
76		Overall Control – NVRAM Reset		
80		Element Control – NVRAM Reset		

Generation Code – must be 0.

Every Control Element starts with a Common Control byte. The common control byte is used to choose which fields to update based on the page. If an element should be ignored by the ATTO FibreBridge, the Select bit must be 0. Conversely, to tell the ATTO FibreBridge to implement the changes specified in the Control Element, the Select Bit should be set to 1.

Common Control is defined as follows:

Bit Byte	7	6	5	4	3	2	1	0
0	Select	Reservd	DISABLE	Reservd			Reserved	

SELECT – Set to 1, signals the ATTO FibreBridge that the Control Element should be used to change ATTO FibreBridge Configuration. Set to 0, signals the ATTO FibreBridge to ignore the Control Element.

DISABLE – used in the Temperature Control Element to stop the ATTO FibreBridge from raising an error based on over/undertemp status.

For Example, to Disable SCSI Port 1 only, and leave the rest of the configuration the same, All Overall Control and Element Control Fields should have the Select bit CLEARED, except for the SCSI Port 1 Element, which should have the Select bit SET and the disable bit in byte 3 SET.

Device Element for Control Page

Bit Byte	7	6	5	4	3	2	1	0
0	Common Control							
1	Reserved							
2	X	X	X	X	X	X	RQST IDENT	X
3	X	X	RQST FAULT	DEVICE OFF (RESET)	X	X	X	X

Rqst Ident: Causes the device front panel to flash an identification signal.

Rqst Fault: Causes the device front panel to flash a fault signal.

Device Off: Causes the device to perform a software reset.

Temperature Sensor Element for Control Page

Bit Byte	7	6	5	4	3	2	1	0
0	Common Control							
1	Reserved							
2								
3								

Common Control-Disable: If Disabled, will not report Warning or Error conditions based on temperature.

SCSI port/transceiver Element for Control Page

Bit Byte	7	6	5	4	3	2	1	0
0	Common Control							
1	Reserved							
2								
3	Reserved			Disable	Reserved			

ATTO FibreBridge GBIC Connector Element for Control Page (3100R and 3200R only)

Bit Byte	7	6	5	4	3	2	1	0
0	Common Control							
1	Reserved							
2	Reserved							
3	Reserved						Online Mode	

Online Mode: 00 : Normal - FibreBridge determines Online/Offline status

01 : Force Online - Fibre Channel is always Online

02 : Force Offline - Fibre Channel is disabled until POR

Language Element For Status Page

Byte	Bit	7	6	5	4	3	2	1	0
0									Common Control
1									Reserved
2									Language Code
3									

Language Code: Currently only one supported value, 0000, which stands for English with the US-ASCII character set.

Fibre Channel/transceiver Element for Control Page

Byte	Bit	7	6	5	4	3	2	1	0
0									Common Control
1									Reserved
2									
3									Reserved

Online Mode: 00 : Normal – Fibre Bridge determines Online/Off Line status.
 01 : Force Online – Fibre Channel is always Online.
 02 : Force Offline – Fibre Channel is disabled.

Fibre Chain Element for Control Page (2100R only)

Byte	Bit	7	6	5	4	3	2	1	0
0									Common Control
1									Reserved
2									
3					Reserved	Disable			Reserved

Disable: Disable the port.

POST Code Element for Control Page

Byte	Bit	7	6	5	4	3	2	1	0
0									Common Control
1									Reserved
2									
3									Clear

Clear: Set to reset the POST Code to 0.

NVRAM Reset Element for Control Page

Byte	Bit	7	6	5	4	3	2	1	0
0									Common Control
1									Reserved
2									
3									Reset

Reset: Restore the Factory Default settings to the NVRAM.

Command Table Templates

Byte	Bit 7	6	5	4	3	2	1	0
0								
1								
2								
3								
4								
5								

Byte	Bit 7	6	5	4	3	2	1	0
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								

Byte	Bit 7	6	5	4	3	2	1	0
0								

Tunnel CDB (ATTO FibreBridge 3100R and 3200R)

The Tunnel CDB* command is a 16 byte Vendor Unique command which allows any 6 or 10 byte CDB to be tunneled through the FibreBridge LUN to a device residing at a different LUN address. This capability is useful for accessing SCSI devices when they are not known to the host. The Tunnel CDB can only be issued to the ATTO FibreBridge device, which, in turn, issues the tunneled CDB to the lun specified in the tunnel CDB.

Bit Byte	7	6	5	4	3	2	1	0		
0	Operation Code (0x9A)									
1	MSB						Level 1 LUN			
2										
3	Tunneled CDB Byte 0									
4	Tunneled CDB Byte 1									
5	Tunneled CDB Byte 2									
6	Tunneled CDB Byte 3									
7	Tunneled CDB Byte 4									
8	Tunneled CDB Byte 5									
9	Tunneled CDB Byte 6									
10	Tunneled CDB Byte 7									
11	Tunneled CDB Byte 8									
12	Tunneled CDB Byte 9									
13	Reserved									
14	Reserved									
15	Control Byte									

*Available on firmware versions 1.1 and higher

The Level 1 LUN field contains the 16-bit logical unit number of the device to which the tunneled command is to be sent. This field should be set to bytes 0 (MSB) and 1 (LSB) of the LUN addresses returned by the REPORT LUNS command.

The Tunneled CDB bytes contain the Command Descriptor Block being tunneled to the device. The length of the Tunneled CDB is determined by examining the Group Code field of the operation code in Tunneled CDB Byte 0.

A tunnel CDB not addressed to the ATTO FibreBridge LUN results in a CHECK CONDITION with a sense key of ILLEGAL REQUEST and additional sense code of INVALID COMMAND OPCODE.

Chapter 6: NVRAM Configuration

ATTO FibreBridge 2100R NVRAM Configuration Parameters Summary

This section provides information on updating the ATTO FibreBridge 2100R flash or nvram parameters using updater.exe (MSDOS-based utility), SCSI Read Buffer or Write Buffer commands. The buffer ID identifies the respective field for either updater input or via the Read/Write Buffer commands. The nvram offset is provided to facilitate interpretation of nvram contents directly.

Buffer ID	nvram offset	Buffer Description (default values*)			
0:	n/a	Flash EEPROM			
1:	0x00 - 0xEF	Entire FibreBridge 2100R NVRAM space			
2:	0x15 - 0x1C	World Wide Name			
3:	0x00	Nvram Revision Level (current: 0x05)			
4:	0x20	Request Queue Length (default 0x00)			
		<i>Buffer Value</i>	<i>Translated Value</i>	<i>Buffer Value</i>	<i>Translated Value</i>
		00	0xFF (255)	04	0x80 (128)
		01	0x10 (16)	05	0x100 (256)
		02	0x20 (32)	06	0x200 (512)
		03	0x40 (64)		
5:	0x21	Response Queue Length (default 0x00)			
		<i>Buffer Value</i>	<i>Translated Value</i>	<i>Buffer Value</i>	<i>Translated Value</i>
		00	0xFF (255)	04	0x80 (128)
		01	0x10 (16)	05	0x100 (256)
		02	0x20 (32)	06	0x200 (512)
		03	0x40 (64)		
6:	0x22	Firmware Options (default 0x02)			
		<i>Bits 7 -2 - Reserved</i>			
		<i>Bit 1 - Fairness 1 = Loop Fairness On (default)</i>			
		<i>Bit 0 - Hard/Soft Address 1 = Hard Addr Enabled</i>			
		<i>0 = Loop Fairness Off 0=SoftAddr abled (default)</i>			
7:	0x24	Maximum Frame Length (default 0x00)			
		<i>Buffer Value</i>	<i>Translated Value</i>	<i>Buffer Value</i>	<i>Translated Value</i>
		00	0x800 (2048)	02	0x400 (1024)
		01	0x200 (512)	03	0x800 (2048)
8:	Reserved				

<u>Buffer ID</u>	<u>nvram offset</u>	<u>Buffer Description (default values*)</u>																								
9:	Reserved																									
a:	0x27	Hard Address (default 0x03)																								
b:	0x28	Cache Options (default 0x00) <i>Bits 7-2 - Reserved</i> Bit 0 - Disk Caching 1 = Disk Caching Only 0 = No Caching																								
c:	0x29	SCSI Adapter 1 Options (default 0x0F)																								
d:	0x2A	SCSI Adapter 2 Options (default 0x0F) <i>Bits 7-5 - Reserved</i> Bit 4 - Power On Bus Reset 1 = Suppressed 0 = Not Suppressed Bit 3 - Tagged Command Queuing 1 = On 0 = Off Bit 2 - Wide Narrow Transfers 1 = Wide 0 = Narrow Bit 1 - Sync/Async Transfers 1 = Sync 0 = Asynch Bit 0 - Ultra/Fast Wide Transfers 1 = Ultra 0 = Fast Wide																								
e:	Reserved																									
f:	Reserved																									
10:	0x2B - 0x2D	Physical Device Addressing Method (default 0x82 0x04 0x44) <i>Consists of 3 hex bytes bb ll tt (bb=busid, ll=lun, tt=target id).</i> <i>The left hex digit is the bit number of the rightmost field bit in the LUN.</i> <i>The right hex digit is the number of bits in the field.</i>																								
11:	0x31 - 0x33	Logical Unit Addressing Method (default 0x52 0x05 0x84) <i>See Physical Device Addressing Method.</i>																								
12:	0x2E - 0x30	Virtual Device Addressing Method (default 0x02 0x63 0x24) <i>See Physical Device Addressing Method.</i>																								
13-15:	Reserved																									
16:	0x23	ATTO FibreBridge Options (default 0x00) <i>Bit 5-7: Reserved.</i> Bit 4: Translate QUEUE FULL to BUSY, 0 = Disable, 1 = Enable <i>Bit 2-3: Reserved.</i> Bit 1: Enable/Disable Bridge Soft Fibre LUN, 1 = Enable, 0 = Disable (FBE) (uses FibreBridge Soft Fibre LUN byte to determine actual ID) Bit 0: perform/suppress LUN translations, 1 = perform, 0 = suppress.																								
17:	Reserved																									
18:	0x37 - 3E	ATTO FibreBridge Name (default space characters (0x20)) User defined printable ASCII string intended to facilitate user identification of each FibreBridge. This string is returned by the INQUIRY command in the ASCII implemented operation definition page (0x82) when the EVPD bit is set to 1.																								
19:	0x25	SCSI Adapter 1 Selection Timeout (default 0x0b)																								
1a:	0x26	SCSI Adapter 2 Selection Timeout (default 0x0b)																								
		<table> <thead> <tr> <th>Buffer Value</th> <th>Timeout Value</th> <th>Buffer Value</th> <th>Timeout Value</th> </tr> </thead> <tbody> <tr> <td>>=0x0b</td> <td>256ms</td> <td>0x06</td> <td>8ms</td> </tr> <tr> <td>0x0a</td> <td>128ms</td> <td>0x05</td> <td>4ms</td> </tr> <tr> <td>0x09</td> <td>64ms</td> <td>0x04</td> <td>2ms</td> </tr> <tr> <td>0x08</td> <td>32ms</td> <td>0x03</td> <td>1ms</td> </tr> <tr> <td>0x07</td> <td>16ms</td> <td><=0x02</td> <td>256ms</td> </tr> </tbody> </table>	Buffer Value	Timeout Value	Buffer Value	Timeout Value	>=0x0b	256ms	0x06	8ms	0x0a	128ms	0x05	4ms	0x09	64ms	0x04	2ms	0x08	32ms	0x03	1ms	0x07	16ms	<=0x02	256ms
Buffer Value	Timeout Value	Buffer Value	Timeout Value																							
>=0x0b	256ms	0x06	8ms																							
0x0a	128ms	0x05	4ms																							
0x09	64ms	0x04	2ms																							
0x08	32ms	0x03	1ms																							
0x07	16ms	<=0x02	256ms																							
1b:	0x01	ATTO FibreBridge Type 0x00 = FibreBridge 2100R 0x01 = FibreBridge 3100R 0x02 = FibreBridge 3200R																								

<u>Buffer ID</u>	<u>nvramp offset</u>	<u>Buffer Description (default values*)</u>
1c:	0x04-0x05	Reserved for Internal Use.
1d:	Reserved	
1e:	0x3f	ATTO FibreBridge Soft Fibre LUN (default 0x07) <i>Bits 7-4: Reserved</i> <i>Bits 3-0: SCSI Lun at which the FibreBridge will respond (0x00 – 0xFF).</i> <i>This parameter is only enabled when LUN translations are performed AND Bridge soft FibreLUNs are enabled in the FBOptions buffer.</i>
1f:	0x40	SCSI Adapter 1 Soft SCSI ID (default 0x07)
20:	0x41	SCSI Adapter 2 Soft SCSI ID (default 0x07) Bits 7-5: Reserved Bit 4: Enable/Disable soft initiator SCSI IDs 1 = Enable soft IDs 0 = Disable Soft IDs Bits 3-0: SCSI ID at which the controller ID will appear on the SCSI bus (0x00-0x0F).

This parameter is only enabled when the soft initiator SCSI IDs bit is enabled for the respective bus.

*Reserved fields/bits generally are set to 0 and are not user definable.

ATTO FibreBridge 3100R NVRAM Configuration Parameters Summary

This section provides information regarding updating the ATTO FibreBridge 3100R flash or nvram parameters using updater.exe (MSDOS-based utility), SCSI Read Buffer or Write Buffer commands. The buffer ID identifies the respective field for either updater input or via the Read/Write Buffer commands. The nvram offset is provided to facilitate interpretation of nvram contents directly. Accessing the ATTO FibreBridge 3100R via ATTO FibreBridge services precludes the need to reference this summary. Unless otherwise indicated, items described herein apply to all models of the ATTO FibreBridge. Items marked FB apply only to the ATTO FibreBridge 2100R Product Module while items marked FBE apply only to the ATTO FibreBridge 3100R model (2 GBIC connectors).

<u>Buffer ID</u>	<u>nvram offset</u>	<u>Buffer Description (default values*)</u>			
0:	n/a	Flash EEPROM			
1:	0x00 - 0xFF	Entire FibreBridge NVRAM space			
2:	0x15 - 0x1C	World Wide Name			
3:	0x00	Nvram Revision Level (current: 0x06)			
4:	0x20	Request Queue Length (default 0x00)			
		<i>Buffer Value</i>	<i>Translated Value</i>	<i>Buffer Value</i>	<i>Translated Value</i>
		00	0xFF (255)	04	0x80 (128)
		01	0x10 (16)	05	0x100 (256)
		02	0x20 (32)	06	0x200 (512)
		03	0x40 (64)		
5:	0x21	Response Queue Length (default 0x00)			
		<i>Buffer Value</i>	<i>Translated Value</i>	<i>Buffer Value</i>	<i>Translated Value</i>
		00	0xFF (255)	04	0x80 (128)
		01	0x10 (16)	05	0x100 (256)
		02	0x20 (32)	06	0x200 (512)
		03	0x40 (64)		
6:	0x22	Firmware Options (default 0x3A)			
		<i>Bit 7-2 - Reserved</i>			
		<i>Bit 1 - Fairness 1 = Loop Fairness On(default) 0 = Loop Fairness Off</i>			
		<i>Bit 0 - Hard/Soft Address 1=HardAddr Enabled 0 = Soft Addr Enabled(default)</i>			
7:	0x24	Maximum Frame Length (default 0x00)			
		<i>Buffer Value</i>	<i>Translated Value</i>	<i>Buffer Value</i>	<i>Translated Value</i>
		00	0x800 (2048)	02	0x400 (1024)
		01	0x200 (512)	03	0x800 (2048)
8:	Reserved				

<u>Buffer ID</u>	<u>nvram offset</u>	<u>Buffer Description (default values*)</u>
9:	Reserved	
a:	0x27	Hard Address (default 0x03)
b:	0x28	Cache Options (default 0x00) <i>Bits 7-2 – Reserved</i> <i>Bit 1 – Write Cache Enable 1 = Write Cache Enabled 0 = Write Cache Disabled</i> <i>Bit 0 - Disk Caching 1 = Disk Caching Only 0 = No Caching</i>
c:	0x29	SCSI Adapter 1 Options (default 0x0F – FBS, default 0x2F – FBE)
d:	0x2A	SCSI Adapter 2 Options (default 0x0F – FBS, default 0x2F – FBE) <i>Bits 7-6 - Reserved</i> <i>Bit 5 - Reserved (FBS)</i> <i>Bit 5 - LVD/Ultra2 Transfers (FBE) 1 = Yes 0 = No</i> <i>Bit 4 – Power On Bus Reset 1 = Suppressed 0 = Not Suppressed</i> <i>Bit 3 - Tagged Command Queuing 1 = On 0 = Off</i> <i>Bit 2 - Wide Narrow Transfers 1 = Wide 0 = Narrow</i> <i>Bit 1 - Sync/Async Transfers 1 = Sync 0 = Async</i> <i>Bit 0 - Ultra/Fast Wide Transfers 1 = Ultra 0 = Fast Wide</i>
e:	Reserved	
f:	Reserved	
10:	0x2B - 0x2D	Physical Device Addressing Method (default 0x82 0x04 0x44) <i>Consists of 3 hex bytes bb ll tt (bb=busid, ll=lun, tt=target id).</i> <i>The left hex digit is the bit number of the rightmost field bit in the LUN.</i> <i>The right hex digit is the number of bits in the field.</i>
11:	0x31 - 0x33	Logical Unit Addressing Method (default 0x53 0x05 0x84) <i>See Physical Device Addressing Method.</i>
12:	0x2E - 0x30	Virtual Device Addressing Method (default 0x02 0x63 0x24) <i>See Physical Device Addressing Method.</i>
13-15:	Reserved	
16:	0x23	ATTO FibreBridge Options (default 0x00) <i>Bit 5-7: Reserved.</i> <i>Bit 4: Translate QUEUE FULL to BUSY, 1 = Enable, 0 = Disable</i> <i>Bit 2-3: Reserved.</i> <i>Bit 1: Enable/Disable Bridge Soft SCSI LUN, 1 = Enable, 0 = Disable (FBE)</i> <i>(uses FibreBridge Soft Fibre LUN byte to determine actual ID)</i> <i>Bit 0: Perform/Suppress LUN Translations, 1 = Perform, 0 = Suppress.</i>
17:	0x08 - 0x0B	ATTO FibreBridge Model Parameters (default 0x00 0x00 0x01 0x00) <i>Byte 3: FC Port Type 0x00 = Unknown 0x01 = DB9 0x02 = GBIC (FBE)</i> <i>Byte 2-0: Reserved</i>
18:	0x37 – 0x3E	ATTO FibreBridge Name (default space characters (0x20)) <i>User defined printable ASCII string intended to facilitate user identification of each FibreBridge. This string is returned by the INQUIRY command in the ASCII implemented operation definition page (0x82) when the EVPD bit is set to 1.</i>

<u>Buffer ID</u>	<u>nvram offset</u>	<u>Buffer Description (default values*)</u>			
19:	0x25	SCSI Adapter 1 Selection Timeout (default 0x0b)			
1a:	0x26	SCSI Adapter 2 Selection Timeout (default 0x0b)			
		<i>Buffer Value</i>	<i>Timeout Value</i>	<i>Buffer Value</i>	<i>Timeout Value</i>
		>=0x0b	256ms	0x06	8ms
		0x0a	128ms	0x05	4ms
		0x09	64ms	0x04	2ms
		0x08	32ms	0x03	1ms
		0x07	16ms	<=0x02	256ms
1b:	0x01	FibreBridge Type			1b:
		0x00 = FibreBridge 2100R			
		0x01 = FibreBridge 3100R			
		0x02 = FibreBridge 3200R			
1c:	0x04-0x05	Reserved for Internal Use.			
1d:	0x42	UART Options (default 0x01)			
		<i>Bit 7-6: Hardware flow control</i>	<i>0 =None</i>	<i>1=Xon/Xoff</i>	<i>2=Hardware</i>
		<i>Bit 5: Echo on/off</i>	<i>0 =Echo off</i>	<i>1=Echo on</i>	
		<i>Bit 4: Stop Bits:</i>	<i>0 =1 Stop Bit</i>	<i>1=2 Stop Bits</i>	
		<i>Bit 3-0: Baud Rate</i>			
		0x0 - 2400		0x4 - 57600	
		0x1 - 9600		0x5 - 115200	
		0x2 - 19200		0x6-0xF - ?	
		0x3 - 38400			
1e:	0x3f	ATTO FibreBridge Soft Fibre LUN (default 0x07)			
		<i>Bits 7-4: Reserved</i>			
		<i>Bits 3-0: SCSI Lun at which the FibreBridge will respond (0x00 – 0x0F).</i>			
		<i>This parameter is only enabled when LUN translations are performed AND Bridge soft SCSI LUN is enabled in the FBOptions buffer.</i>			
1f:	0x40	SCSI Adapter 1 Soft SCSI ID (default 0x07)			
20:	0x41	SCSI Adapter 2 Soft SCSI ID (default 0x07)			
		<i>Bits 7-5: Reserved</i>			
		Bit 4: Enable/Disable soft initiator SCSI IDs	1 = Enable soft IDs	0 = Disable soft IDs	
		Bits 3-0: SCSI ID at which the controller ID will appear on the SCSI bus (0x00-0x0F).			
		This parameter is only enabled when the soft initiator SCSI IDs bit is enabled for the Respective bus.			
21:	0x44 - 0x47	IP Address (default 0xC0 0xA8 0x01 0x00) (FBE)			
		This four-byte field indicates the ATTO FibreBridge IP address for use with Ethernet services.			
		The address is stored in dotted-decimal notation (e.g. 0xC0 0xA8 0x01 0x00 Represents the IP address 192.168.1.0).			
22:	0x48 – 0x4B	IP Gateway (default 0x00 0x00 0x00 0x00) (FBE)			
		This four-byte field indicates the address of a gateway for the ATTO FibreBridge Ethernet services.			
		The address is stored in dotted-decimal notation (e.g. 0xC0 0xA8 0x01 0x00 represents the IP address 192.168.1.0).			
23:	0x4C – 0x4F	IP Subnet Mask (default 0xff 0xff 0xff 0x00) (FBE)			
		This four-byte field indicates the subnet mask for ATTO FibreBridge Ethernet services. The address is stored in dotted-decimal notation (e.g. 0xFF 0xFF 0xFF 0x00 represents the IP address 255.255.255.0).			
24:	0x50	Ethernet Options (default 0x01) (FBE)			
		<i>Bits 7-5: Reserved</i>			
		<i>Bit 4: DHCP</i>	<i>1=DHCP Enabled</i>	<i>0=DHCP Disabled</i>	
		<i>Bit 3: Reserved</i>			
		<i>Bit 2: 100 Base-T Speed</i>	<i>1=100 Base-T Enabled</i>	<i>0=100 Base-T Disabled</i>	
		<i>Bit1: 10 Base-T Speed</i>	<i>1=10Base-T Enabled</i>	<i>0=10 Base-T Disabled</i>	

<u>Buffer ID</u>	<u>nvram offset</u>	<u>Buffer Description (default values*)</u>
25:	0x51	<p><i>Bit0: Auto Speed Detect 1=Speed Detection Enabled 0=SpeedDetection Disabled</i></p> <p>Temperature High Warning (default: 0x28) <i>A user definable SBYTE parameter that indicates when certain alarm flags should be set within SCSI Enclosure Services with respect to excessive temperature. The default Temperature High Warning is 40 degrees Celsius.</i></p>
26:	0x52	<p>Temperature Low Warning (default: 0x05) <i>A user definable SBYTE parameter that indicates when certain alarm flags should be set within SCSI Enclosure Services with respect to excessive temperature. The default Temperature Low Warning is 5 degrees Celsius.</i></p>
27:	0x53	<p>Event Logging Flags (default 0x02)</p> <p><i>Bits 7-2: Reserved</i></p> <p><i>Bit 1: Event Status Flag 1 = Log all events 0 = Log events with status other than good</i></p> <p><i>Bit 0: Enabled Flag 1 = Logging enabled 0 = Logging disabled</i></p>
28:	0x54	<p>Event Logging Subsystem(default 0x3F)</p> <p><i>Bit 7-6: Reserved</i></p> <p><i>Bit 5: NVRAM & Flash 1 = Logging enabled 0 = Logging disabled</i></p> <p><i>Bit 4: GBIC Connector 1 = Logging enabled 0 = Logging disabled</i></p> <p><i>Bit 3: Reserved</i></p> <p><i>Bit 2: Ethernet 1 = Logging enabled 0 = Logging disabled</i></p> <p><i>Bit 1: SCSI Processor/i960 1 = Logging enabled 0 = Logging disabled</i></p> <p><i>Bit 0: FCP Processor/i960 1 = Logging enabled 0 = Logging disabled</i></p>
29	0x55	<p>Event Logging Level (default 0x3F)</p> <p><i>Bit 7-6: Reserved</i></p> <p><i>Bit 5: Debug, ATTO tracking events 1 = Logging enabled 0 = Logging disabled</i></p> <p><i>Bit 4: Other, otherwise not categorized 1 = Logging enabled 0 = Logging disabled</i></p> <p><i>Bit 3: Failure, hard failure 1 = Logging enabled 0 = Logging disabled</i></p> <p><i>Bit 2: Critical, operation limited/curtailed 1 = Logging enabled 0 = Logging disabled</i></p> <p><i>Bit 1: Warning, unexpected situation/condition 1 = Logging enabled0 = Logging disabled</i></p> <p><i>Bit 0: Info, general information 1 = Logging enabled 0 = Logging disabled</i></p>
2a	0x56	<p>Event Displaying Flags (default 0x02)</p> <p><i>Bits 7-2: Reserved</i></p> <p><i>Bit 1: Event Status Flag 1 = Display all events 0 = Display events with status other than good</i></p> <p><i>Bit 0: Reserved</i></p>
2b	0x57	<p>Event Displaying Subsystem(default 0x3F)</p> <p><i>Bit 7-6: Reserved</i></p> <p><i>Bit 5: NVRAM & Flash 1 = Displaying enabled 0 = Displaying disabled</i></p> <p><i>Bit 4: GBIC Connector 1 = Displaying enabled 0 = Displaying disabled</i></p> <p><i>Bit 3: Reserved</i></p> <p><i>Bit 2: Ethernet 1 = Displaying enabled 0 = Displaying disabled</i></p> <p><i>Bit 1: SCSI Processor/i960 1 = Displaying enabled 0 = Displaying disabled</i></p> <p><i>Bit 0: FCP Processor/i960 1 = Displaying enabled 0 = Displaying disabled</i></p>
2c	0x58	<p>Event Displaying Level (default 0x3F)</p> <p><i>Bit 7-6: Reserved</i></p> <p><i>Bit 5: Debug, ATTO tracking events 1 = Displaying enabled 0 = Displaying disabled</i></p> <p><i>Bit 4: Other, otherwise not categorized 1 = Displaying enabled 0 = Displaying disabled</i></p> <p><i>Bit 3: Failure, hard failure 1 = Displaying enabled 0 = Displaying disabled</i></p> <p><i>Bit 2: Critical, operation limited/curtailed 1 = Displaying enabled 0 = Displaying disabled</i></p> <p><i>Bit 1: Warning, unexpected situation/cond. 1 = Displaying enabled 0 = Displaying disabled</i></p> <p><i>Bit 0: Info, general information1 = Displaying enabled 0 = Displaying disabled</i></p>

*Reserved fields/bits generally are set to 0 and are not user definable.

ATTO FibreBridge 2200R/D, 3200R NVRAM Configuration Parameters Summary

This section provides information regarding updating the FibreBridge 3200R flash or nvram parameters using updater.exe (MSDOS-based utility) or SCSI Read Buffer or Write Buffer commands. The buffer ID identifies the respective field for either updater input or via the Read/Write Buffer commands. The nvram offset is provided to facilitate interpretation of nvram contents directly. Accessing the FibreBridge 3200R via BridgeTools (WinNT and Mac based utility) precludes the need to reference this summary.

<u>Buffer ID</u>	<u>nvram offset</u>	<u>Buffer Description (default values*)</u>			
0:	n/a	Flash EEPROM			
1:	0x00 - 0xFF	Entire FibreBridge NVRAM space			
2:	0xF0 - 0xF7	World Wide Name			
3:	0x00	Nvram Revision Level (current: 0x00)			
4:	0x20	Request Queue Length (default 0x00)	<i>Buffer Value</i>	<i>Translated Value</i>	<i>Buffer Value</i>
			00	0xFF (255)	04
			01	0x10 (16)	05
			02	0x20 (32)	06
			03	0x40 (64)	
5:	0x21	Response Queue Length (default 0x00)	<i>Buffer Value</i>	<i>Translated Value</i>	<i>Buffer Value</i>
			00	0xFF (255)	04
			01	0x10 (16)	05
			02	0x20 (32)	06
			03	0x40 (64)	
6:	0x22	Firmware Options (default 0x803E)	<i>Bit 15-3 – Reserved</i>		
			<i>Bit 2 – Duplex Mode 1 = Full Duplex 0 = Half Duplex</i>		
			<i>Bit 1 - Fairness 1 = Loop Fairness On(default) 0=Loop Fairness Off</i>		
			<i>Bit 0 - Hard/Soft Address 1 = Hard Addr Enabled 0 = Soft Addr Enabled (default)</i>		
7:	0x25	Maximum Frame Length (default 0x00)	<i>Buffer Value</i>	<i>Translated Value</i>	<i>Buffer Value</i>
			00	0x800 (2048)	02
			01	0x200 (512)	03
					0x400 (1024)
					0x800 (2048)

<u>Buffer ID</u>	<u>nvram offset</u>	<u>Buffer Description (default values*)</u>																			
8:	0x44	<p>Firmware Options (default 0x0000)</p> <p><i>Bits 15-10 Reserved</i></p> <table> <tr> <td>Bit 9</td><td>ACK0 Enable 1 = Use ACK0 w/ Class2</td><td>0 = Use ACK1 w/ Class2</td></tr> <tr> <td>Bit 8</td><td>Class 2 Support 1 = Class 2 Enabled</td><td>0 = Class 2 Disabled</td></tr> <tr> <td>Bit 7</td><td>Reserved</td><td></td></tr> </table> <p><i>Bits 6-4 Connection Mode</i></p> <table> <thead> <tr> <th>Buffer Value</th><th>Meaning</th></tr> </thead> <tbody> <tr> <td>3</td><td>Point-toPoint Preferred, Otherwise Loop Only (unsupported)</td></tr> <tr> <td>2</td><td>Loop Preferred. Otherwise Point-toPoint (unsupported)</td></tr> <tr> <td>1</td><td>Point-to Point only</td></tr> <tr> <td>0</td><td>Loop only</td></tr> </tbody> </table> <p><i>Bits 3-0 Reserved</i></p>	Bit 9	ACK0 Enable 1 = Use ACK0 w/ Class2	0 = Use ACK1 w/ Class2	Bit 8	Class 2 Support 1 = Class 2 Enabled	0 = Class 2 Disabled	Bit 7	Reserved		Buffer Value	Meaning	3	Point-toPoint Preferred, Otherwise Loop Only (unsupported)	2	Loop Preferred. Otherwise Point-toPoint (unsupported)	1	Point-to Point only	0	Loop only
Bit 9	ACK0 Enable 1 = Use ACK0 w/ Class2	0 = Use ACK1 w/ Class2																			
Bit 8	Class 2 Support 1 = Class 2 Enabled	0 = Class 2 Disabled																			
Bit 7	Reserved																				
Buffer Value	Meaning																				
3	Point-toPoint Preferred, Otherwise Loop Only (unsupported)																				
2	Loop Preferred. Otherwise Point-toPoint (unsupported)																				
1	Point-to Point only																				
0	Loop only																				
9:	Reserved																				
a:	0x28	Hard Address (default 0x03)																			
b:	0x29	Cache Options (default 0x00)																			
c:	0x2A	<i>Bits 7-2 - Reserved</i>																			
d:	0x2B	<p>Bit 1 - Write Cache Enable 1 = Write Cache Enabled 0 = Write Cache Disabled</p> <p>Bit 0 - Disk Caching 1 = Disk Caching Only 0 = No Caching</p>																			
e:	Reserved	SCSI Adapter 1 Options (default 0x2F)																			
f:	Reserved	SCSI Adapter 2 Options (default 0x2F)																			
10:	0x2C - 0x2E	<p><i>Bits 7-6 - Reserved</i></p> <table> <tr> <td>Bit 5 - LVD/Ultra2 Transfers</td><td>1 = Yes</td><td>0 = No</td></tr> <tr> <td>Bit 4 - Power On Bus Reset</td><td>1 = Suppressed</td><td>0 = Not Suppressed</td></tr> <tr> <td>Bit 3 - Tagged Command Queuing</td><td>1 = On</td><td>0 = Off</td></tr> <tr> <td>Bit 2 - Wide Narrow Transfers</td><td>1 = Wide</td><td>0 = Narrow</td></tr> <tr> <td>Bit 1 - Sync/Async Transfers</td><td>1 = Sync</td><td>0 = Async</td></tr> <tr> <td>Bit 0 - Ultra/Fast Wide Transfers</td><td>1 = Ultra</td><td>0 = Fast Wide</td></tr> </table>	Bit 5 - LVD/Ultra2 Transfers	1 = Yes	0 = No	Bit 4 - Power On Bus Reset	1 = Suppressed	0 = Not Suppressed	Bit 3 - Tagged Command Queuing	1 = On	0 = Off	Bit 2 - Wide Narrow Transfers	1 = Wide	0 = Narrow	Bit 1 - Sync/Async Transfers	1 = Sync	0 = Async	Bit 0 - Ultra/Fast Wide Transfers	1 = Ultra	0 = Fast Wide	
Bit 5 - LVD/Ultra2 Transfers	1 = Yes	0 = No																			
Bit 4 - Power On Bus Reset	1 = Suppressed	0 = Not Suppressed																			
Bit 3 - Tagged Command Queuing	1 = On	0 = Off																			
Bit 2 - Wide Narrow Transfers	1 = Wide	0 = Narrow																			
Bit 1 - Sync/Async Transfers	1 = Sync	0 = Async																			
Bit 0 - Ultra/Fast Wide Transfers	1 = Ultra	0 = Fast Wide																			
11:	0x32 - 0x34	Physical Device Addressing Method (default 0x82 0x04 0x44)																			
12:	0x2F - 0x31	<p><i>Consists of 3 hex bytes bb ll tt (bb=busid, ll=lun, tt=target id).</i></p> <p><i>The left hex digit is the bit number of the rightmost field bit in the LUN.</i></p> <p><i>The right hex digit is the number of bits in the field.</i></p> <p>Logical Unit Addressing Method (default 0x53 0x05 0x84)</p> <p><i>See Physical Device Addressing Method.</i></p> <p>Virtual Device Addressing Method (default 0x02 0x63 0x24)</p> <p><i>See Physical Device Addressing Method.</i></p>																			
13-15:	Reserved																				
16:	0x24	<p>ATTO FibreBridge Options (default 0x00)</p> <p><i>Bit 5-7: Reserved.</i></p> <p><i>Bit 4: Translate QUEUE FULL to BUSY, 1 = Enable, 0 = Disable</i></p> <p><i>Bit 2-3: Reserved.</i></p> <p><i>Bit 1: Enable/Disable Bridge Soft SCSI LUN, 1 = Enable, 0 = Disable</i> <i>(uses FibreBridge Soft Fibre LUN byte to determine actual ID)</i></p> <p><i>Bit 0: Perform/Suppress LUN Translations, 1 = Perform, 0 = Suppress.</i></p>																			

	<u>Buffer ID</u>	<u>nvram offset</u>	<u>Buffer Description (default values*)</u>
17:	0x08 - 0x0B	ATTO FibreBridge Parameters (default 0x00 0x00 0x01 0x00) <i>Byte 3: FC Port Type</i> 0x00 = Unknown 0x01 = DB9 0x02 = GBIC <i>Byte 2-0: Reserved</i>	
18:	0x38 – 0x3F	ATTO FibreBridge Name (default space characters (0x20)) A user defined printable ASCII string intended to facilitate user identification of each FibreBridge. <i>This string is returned by the INQUIRY command in the ASCII implemented operation definition page (0x82) when the EVPD bit is set to 1.</i>	
19:	0x26	SCSI Adapter 1 Selection Timeout (default 0x0b)	
1a:	0x27	SCSI Adapter 2 Selection Timeout (default 0x0b) <i>Buffer Value0 Timeout Value Buffer Value Timeout Value</i> ≥=0x0b 256ms 0x06 8ms 0x0a 128ms 0x05 4ms 0x09 64ms 0x04 2ms 0x08 32ms 0x03 1ms 0x07 16ms <=0x02 256ms 1b: 0x01	
1b:		ATTO FibreBridge Type (Read Only) 0x02 = FibreBridge Enterprise II (FB3200)	
1c:	0x04-0x05	Reserved for Internal Use.	
1d:	0x43	UART Options (default 0x01) <i>Bit 7-6: Hardware flow control</i> 0 =None 1=Xon/Xoff 2=Hardware <i>Bit 5: Echo on/off</i> 0 =Echo off 1=Echo on <i>Bit 4: Stop Bits:</i> 0 =1 Stop Bit 1=2 Stop Bits <i>Bit 3-0: Baud Rate</i> 0x0 - 2400 0x4 - 57600 0x1 - 9600 0x5 - 115200 0x2 - 19200 0x6-0xF - ? 0x3 - 38400	
1e:	0x42	ATTO FibreBridge Soft Fibre LUN (default 0x07) <i>Bits 7-4: Reserved</i> <i>Bits 3-0: SCSI Lun at which the FibreBridge will respond (0x00 – 0xFF). This Parameter is only enabled when LUN translations are performed AND Bridge soft SCSI LUN is enabled in the FBOptions buffer.</i>	
1f:	0x40	SCSI Adapter 1 Soft SCSI ID (default 0x07)	
20:	0x41	SCSI Adapter 2 Soft SCSI ID (default 0x07) <i>Bits 7-5: Reserved</i> <i>Bit 4: Enable/Disable soft initiator SCSI IDs 1 = Enable soft IDs 0 = Disable Soft IDs</i>	
		<i>Bits 3-0: SCSI ID at which the controller ID will appear on the SCSI bus (0x00-0x0F). This parameter is only enabled when the soft initiator SCSI IDs bit is enabled for the respective bus.</i>	
21:	0x46 - 0x49	IP Address (default 0xC0 0xA8 0x01 0x00) <i>This four-byte field indicates the FibreBridge IP address for use with Ethernet services. The address is stored in dotted-decimal notation (e.g. 0xC0 0xA8 0x01 0x00 represents the IP address 192.168.1.0).</i>	
22:	0x4A – 0x4D	IP Gateway (default 0x00 0x00 0x00 0x00) <i>This four-byte field indicates the address of a gateway for the FibreBridge Ethernet services. The address is stored in dotted-decimal notation (e.g. 0xFF 0x00 represents the IP address 192.168.1.0).</i>	

<u>Buffer ID</u>	<u>nvram offset</u>	<u>Buffer Description (default values*)</u>
23:	0x4E – 0x51	IP Subnet Mask (default 0xff 0xff 0xff 0x00) <i>This four-byte field indicates the subnet mask for FibreBridge Ethernet services. The address is stored in dotted-decimal notation (e.g. 0xFF 0xFF 0xFF 0x00 represents the IP address 255.255.255.0).</i>
24	0x52	Ethernet Options (default 0x01) <i>Bits 7-5: Reserved</i> <i>Bit 4: DHCP 1= DHCP Enabled 0= DHCP Disabled</i> <i>Bit 3: Reserved</i> <i>Bit 2: 100 Base-T Speed 1= 100 Base-T Enabled 0= 100 Base-T Disabled</i> <i>Bit 1: 10 Base-T Speed 1= 10Base-T Enabled 0= 10 Base-T Disabled</i> <i>Bit 0: Auto Speed Detect 1= Speed Detection Enabled 0= Speed Detection Disabled</i>
25:	0x53	Temperature High Warning (default: 0x28) <i>A user definable SBYTE parameter that indicates when certain alarm flags should be set within SCSI Enclosure Services with respect to excessive temperature. The default Temperature High Warning is 40 degrees Celsius.</i>
26:	0x54	Temperature Low Warning (default: 0x05) <i>A user definable SBYTE parameter that indicates when certain alarm flags should be set within SCSI Enclosure Services with respect to excessive temperature. The default Temperature Low Warning is 5 degrees Celsius.</i>
27	0x55	Event Logging Flags (default 0x02) <i>Bits 7-2: Reserved</i> <i>Bit 1: Event Status Flag 1 = Log all events 0 = Log events with status other than good</i> <i>Bit 0: Enabled Flag 1 = Logging enabled 0 = Logging disabled</i>
28	0x56	Event Logging Subsystem (default 0x3F) <i>Bit 7-6: Reserved</i> <i>Bit 5: NVRAM & Flash 1 = Logging enabled 0 = Logging disabled</i> <i>Bit 4: GBIC Connector 1 = Logging enabled 0 = Logging disabled</i> <i>Bit 3: Reserved</i> <i>Bit 2: Ethernet 1 = Logging enabled 0 = Logging disabled</i> <i>Bit 1: SCSI Processor/i960 1 = Logging enabled 0 = Logging disabled</i> <i>Bit 0: FCP Processor/i9601 = Logging enabled 0 = Logging disabled</i>
29	0x57	Event Logging Level (default 0x3F) <i>Bit 7-6: Reserved</i> <i>Bit 5: Debug, ATTO tracking events 1 = Logging enabled 0 = Logging disabled</i> <i>Bit 4: Other, otherwise not categorized 1 = Logging enabled 0 = Logging disabled</i> <i>Bit 3: Failure, hard failure 1 = Logging enabled 0 = Logging disabled</i> <i>Bit 2: Critical, operation limited/curtailed 1 = Logging enabled 0 = Logging disabled</i> <i>Bit 1: Warning, unexpected situation/condition 1 = Logging enabled 0 = Logging disabled</i>
2a	0x58	<i>Bit 0: Info, general information 1 = Logging enabled 0 = Logging disabled</i> Event Displaying Flags (default 0x02) <i>Bits 7-2: Reserved</i> <i>Bit 1: Event Status Flag 1 = Display all events 0 = Display events with status other than good</i> <i>Bit 0: Reserved</i>

<u>Buffer ID</u>	<u>nvrpm offset</u>	<u>Buffer Description (default values*)</u>
2b	0x59	<p>Event Displaying Subsystem (default 0x3F)</p> <p><i>Bit 7-6: Reserved</i></p> <p><i>Bit 5: NVRAM & Flash</i> 1 = Displaying enabled 0 = Displaying disabled <i>Bit 4: GBIC Connector</i> 1 = Displaying enabled 0 = Displaying disabled <i>Bit 3: Reserved</i> <i>Bit 2: Ethernet</i> 1 = Displaying enabled 0 = Displaying disabled <i>Bit 1: SCSI Processor/i960</i> 1 = Displaying enabled 0 = Displaying disabled <i>Bit 0: FCP Processor/i960</i> 1 = Displaying enabled 0 = Displaying disabled</p>
2c	0x5A	<p>Event Displaying Level (default 0x3F)</p> <p><i>Bit 7-6: Reserved</i></p> <p><i>Bit 5: Debug, ATTO tracking events</i> 1 = Displaying enabled 0 = Displaying disabled <i>Bit 4: Other, otherwise not categorized</i> 1 = Displaying enabled 0 = Displaying disabled <i>Bit 3: Failure, hard failure</i> 1 = Displaying enabled 0 = Displaying disabled <i>Bit 2: Critical, operation limited/curtailed</i> 1 = Displaying enabled 0 = Displaying disabled <i>Bit 1: Warning, unexpected situation/cond.</i> 1 = Displaying enabled 0 = Displaying disabled <i>Bit 0: Info, general information</i> 1 = Displaying enabled 0 = Displaying disabled</p>

*Reserved fields/bits generally are set to 0 and are not user definable.

Chapter 7: Error Codes

The following is a list of Error Codes that may be present with the ATTO FibreBridge 2200R/D, 3100R and 3200R.

Throughout the following description, references are made to the ATTO FibreBridge Services port, either RS232 or Ethernet/telnet. Models of the ATTO FibreBridge support varying levels of such support:

1. RS232 output at power-up;
2. ATTO FibreBridge Services commands/menus over RS232;
3. ATTO FibreBridge Services commands/menus over telnet.

The ATTO FibreBridge Ready LED indicates normal operation or the occurrence of various ATTO FibreBridge detected errors. In normal operation, the Ready LED remains constantly lighted. In the case of the ATTO FibreBridge Services Identify Bridge command, or an ATTO FibreBridge-detected error, the Ready LED displays a blink code pattern, consisting of a series of blinks, a 1-second pause, and a second series of blinks. At the end of this second series of blinks, the ATTO FibreBridge pauses for 4 seconds, and displays the blink sequence again.

The Identify the ATTO FibreBridge blink pattern (m, n) is intended to help physically identify a specific ATTO FibreBridge from among a pool.

In case of error, the first blink count indicates the ATTO FibreBridge component* encountering the problem, and the second blink count indicates the specific error occurring. In general, any blink code requires notification of ATTO for resolution or for instructions. The following first blink code values indicate an ATTO FibreBridge situation as indicated. When you call ATTO to report an error code, please provide both blink codes.

- 1, 2, 3 indicate a processor or memory problem
- 4 indicates a Fibre Channel interface problem
- 5, 6 indicate a SCSI port problem (5 = SCSI port 1, 6 = SCSI port 2)
- 7 indicates a problem with the connection to the Fibre Channel
- 8 indicates a general internal processing problem
- 9 indicates a SCSI Enclosure Services problem.

Blink codes are saved internal to the ATTO FibreBridge, and additional information may be available upon a power cycle of the bridge. The last error code is displayed to the RS232 port at power up, and can be retrieved via RS232 or telnet via the Error Log command.

The only user action to resolve any blink code situation is to power cycle the ATTO FibreBridge. This may clear the situation causing the blink code. All blink codes should be reported to ATTO Technology, Inc.

* Although blink codes are present on the 2100R, Ethernet and RS-232 ports are not available. Therefore the user can not retrieve error code. Contact ATTO Technology at (716) 691-1999 for more information on retrieving error code for the ATTO FibreBridge 2100R.

How to Contact ATTO Technology, Inc.

For customer service and sales information, call Monday through Friday, Eastern Standard Time 8:00 AM to 7:00 PM or by fax and web site 24 hours a day.

ATTO Technology Inc.
155 CrossPoint Parkway
Amherst, NY 14068
(716) 691-1999 - voice
(716) 691-9353 - fax
<http://www.attotech.com>

ATTO Technology can also be reached via e-mail at the following addresses:

Sales Support: sls@attotech.com

Technical Support: techsupp@attotech.com

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